Team Invasion Games within the Scottish Physical Education Curriculum: rhetoric, reality and implications for policy

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PhD

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2008

Declaration

I declare that this is entirely my own work and that it has not been submitted in any form for another degree or professional qualification.

Signed

Date 19-08-08

Acknowledgements

I would firstly like to thank my supervisor John Sproule. He provided me with support, knowledge, encouragement and confidence throughout this long and difficult process. I would also like to thank all of the participants that took part in this study. I hope that they have learned as much about teaching and learning team invasion games as I have. I would also like to offer my thanks to those colleagues and friends who helped me to make sense of my data and proof read my work. Thank you to Kevin Morgan, Amanda Martindale, Rosie Mulholland, Kenny Baillie, John Wang, Caroline Ellice, Sarah Holliday, Manya Buchan, Kirsty Murray and my sister Jane Sadran. I offer special thanks to those people closest to me, my Mum, Dad, Jane and Lorraine, and my extended family John, Irene, Marlene and Derek.

Publications

Gray, S., Sproule, J. and Wang, J. C. K. (2008) Pupils' perceptions of and experiences in team invasion games: a case study of a Scottish secondary school and its three Feeder primary schools, *European Physical Education Review,* 14 (2), 179-201.

Publications Under Review

Gray, S., Sproule, J. and Morgan, K. (2008) Teaching Team Invasion Games and Motivational Climate, *European Physical Education Review.*

Gray, S. and Sproule, J. (2008) Developing Competence in Team Invasion Games, *Physical Education and Sport Pedagogy.*

Conference Presentations

Gray, S. (14-17 May, 2008) The effects of a TGfU approach to teaching games on motivational climate. Paper presented at the 4th Teaching Games for Understanding Conference, Vancouver, Canada.

Abstract

Team Invasion Games (TIG) such as soccer, field hockey and basketball hold a prominent position within Physical Education (PE) curricula in schools in Scotland. However, the Review Group on PE (Scottish Executive, 2004a) claim that fewer pupils in schools are able to relate to these 'traditional' activities and that this may be one of the reasons why pupils choose to opt out of PE and physical activity. Consequently, the Review Group suggests that PE curricula should be wider with more choice in order to cater for the diverse interests of pupils in schools in Scotland. However, one of the issues with the claim made by the Review Group is that it is not based on any empirical Scottish based research. Accordingly, one of the aims of this thesis was to investigate the perceptions and experiences of pupils and teachers in relation to TIG within a Scottish urban state school and its three feeder primary schools. The findings from this research indicated that both the teachers and the pupils in each school valued TIG, but the value the pupils attached to TIG was contingent on their perception of competence in TIG.

Consequently, this thesis also investigated the ways in which the PE teachers in each school taught TIG. The results from this part of the thesis found that the teachers predominately used teacher-led, skill-focused approaches, especially in the primary schools. None of the teachers indicated any awareness of alternative, game-based, pupil-centred teaching approaches such as Teaching Games for Understanding (TGfU) (Bunker & Thorpe, 1982) or the Tactical approach (Griffin et al., 1997). Accordingly, the final part of this thesis involved an intervention where one teacher

from the urban state secondary school was introduced to a game-based, pupil-centred teaching approach in order to teach basketball to a class of secondary 1 (S1) pupils (n=27: age 12-13yrs). The effects this approach had on pupil learning were compared to another S1 class (n=25) who took part in their regular 'skill-focused' basketball lessons. The findings from this comparative study indicated that the game-based class performed significantly better in 4v4 basketball games for decision-making on-the-ball ($p<0.05$) and off-the-ball ($p<0.001$). The game-based group also acquired more sophisticated basketball knowledge and perceived their decision-making competence to be significantly higher from pre to post intervention ($p<0.01$) compared to the skill-focused group. Moreover, findings evidenced that teaching using a game-based, pupil-centred approach resulted in more teacher behaviours associated with a mastery motivational climate, as well as positive cognitive and affective pupil responses including significantly higher perception of competence ($p<0.05$) and increased enjoyment ($p<0.001$).

The results of this thesis are important for those responsible for curriculum change and innovation in Scotland. They show that there is a need to reconsider the proposed changes to widen PE curricula in Scotland and focus more attention on developing teachers' knowledge and understanding of different approaches to teach TIG, as well as their knowledge and understanding of the conceptual underpinnings of such approaches.

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Chapter 1: Introduction

Physical Education (PE) within the Scottish curriculum is a critical part of a child's education. It is unique amongst all the other subjects in that it enhances a variety of skills associated with development in the psychomotor, cognitive and affective domains (Mandigo & Holt, 2004). The richness and diversity of the skills that are associated with learning in PE are reflected in the aims of curricular documents such as the 5-14 Expressive Arts Guidelines (SOED, 1992). This is a curriculum framework that describes the aims of PE in terms of the development of children's movement skills, the application of movement skills in a variety of contexts and, to develop pupils' understanding of movement and movement contexts. Additionally, it aims to encourage pupils to co-operate, compete and collaborate within a variety of physical activity contexts. The Review Group on PE (Scottish Executive, 2004a), a group charged with making recommendations about improving the provision of PE in Scotland, claim that not only can PE be inclusive, but it can also develop pupils' confidence and self-esteem. Moreover, the Review Group believes that PE can contribute to the social life of the school and its ethos and, provide foundation skills and knowledge for a lifetime of activity.

1.1: Team Invasion Games

Within PE programmes in Scotland there is a recognition that pupils should be offered a balanced curriculum and, traditionally, team invasion games (TIG) have played a critical and prominent role within these curricula. Team invasion games are games such as soccer, rugby, field hockey, basketball and shinty. They are games

where one team has possession of an object (usually a ball) and aim to move the object through the opposing team's territory, towards a goal or target so that they can score a point, goal, basket, try or touchdown. As one team has possession of the object, the opposing team endeavours to defend their territory so that the attacking team is unable to score. Additionally, the defending team aims to dispossess the attacking team so that it can begin to move the object into the opposing team's territory in order to score. To win the game, one team must score more points than the other within the boundaries of the rules, the playing area and the time limits of the game. A team's success in TIG is based on fundamental attributes such as fitness, competency in basic and specific motor skills and good communication. Moreover, a successful team will also be able to work as a unit (consisting of various sub-units) so that collectively, they can outwit and outplay their opponents. This ability is linked to the players' knowledge, understanding and application of the game, strategy and tactics, as well as the strengths and weaknesses of each team member. It is also linked to their knowledge and understanding of the opposition's strategy, tactics, strengths and weaknesses.

1.2: Team Invasion Games and the PE Curriculum in Scotland

The 5-14 Expressive Arts Guidelines (SOED, 1992) support the notion of a balanced PE curriculum and the important role that TIG play within a balanced curriculum. These Guidelines recommend that children participate in any combination of physical activities, such as games, team sports, dance, swimming, athletics and gymnastics. The Standard Grade Physical Education (SEB, 1988) curriculum for those pupils who wish to study PE in a more rigorous way requires children to

participate in a range of physical activities, at least five of which should come from the following categories: gymnastics, dance, water-based activities, outdoor pursuits, individual activities (directly competitive), individual activities (indirectly competitive), team games (indoor) and team games (outdoor). By providing this range of physical activities pupils are given the opportunity to develop fundamental skills within the affective, psychomotor and cognitive domains that are key for a successful and physically active future. Additionally, without the significant presence of team games, where pupils learn to develop movement skills, apply game knowledge, work as a team and deal with winning and losing, their development within each domain may be seriously impeded.

1.3: Affective, Psychomotor and Cognitive Learning

Affective processes are how we deal with things emotionally and include feelings, attitudes, enthusiasm and motivation, all of which are expressions that are linked to social, moral and emotional values. TIG can be used as a vehicle for enhancing learners' value systems, for example through encouraging pupils to listen, share and show commitment:

> In the physical education context, individuals are afforded opportunities through a range of physical activities to develop qualities of support, co-operation, teamwork, loyalty and listening and speaking skills that enable them to practically participate with others in a team, by themselves, or simply allow them to spectate. In the course of developing these social skills, teachers of physical education should provide a range of opportunities for pupils to experience co-operating with others and working as a team. The clearest example of this type of work is seen in team game (Blake, 1996, p. 10).

Furthermore, by abiding by rules that are associated with concepts of right and wrong, team games afford pupils the opportunity to develop and express their moral

values in the form of fairness, integrity and justice and in making judgements about foul play and cheating (Theodoulides & Armour, 2001):

> The need, therefore, to not only know and understand rules and conventions but also to be able to apply them, is not only a requirement of physical education and sport but a prerequisite for an ordered society. (Blake, 1996, p. 8)

Through development in the affective domain, pupils become more satisfied with their participation in TIG because they are able to attach meaning to their roles and responsibilities within the team. Furthermore, these feelings are enhanced when they develop positive relationships with other team-mates and when they begin to feel part of a team. All of these factors increase the levels of enjoyment the pupils experience and facilitate more enjoyable experiences that may have "implications for motivation and continued participation, even after schooling has been completed" (Holt et al., 2002, p. 167).

TIG also have the potential to influence pupils' health and well being by making a contribution to the recommended one hour of daily moderate to vigorous physical activity (Scottish Executive, 2003). Research that has taken place to investigate children's activity levels during PE lessons has uncovered that, from a physiological perspective, children work harder during games lessons compared to any other lesson within the PE curriculum (Fairclough & Stratton, 2005). Further, the type of intermittent activity players experience during TIG has the potential to stimulate adaptations in skeletal muscle that improve performance and have implications for improving health (Coyle, 2005). This finding challenges Fairclough and Stratton's (2005) belief that motor, social and cognitive goals in PE 'can be inconsistent with

maximising participation in health-enhancing physical activity' (Fairclough & Stratton, 2005, p. 15).

Participating in, and learning to play, TIG also contributes to development within the psychomotor and cognitive domains. From a psychomotor perspective, if children want to access TIG, they must be able to execute a variety of motor skills, from very simple skills such as running, dodging, starting, stopping and changing direction to more complex, game specific skills such as kicking (soccer/rugby), or hitting (hockey/shinty) or shooting towards a basket (netball/basketball). Developing a range of skills, particularly the more basic skills in the early years, is very important for a successful future in participating in a wide variety of TIG (Jess & Collins, 2003). The more competent young children become in performing TIG, the more activities they can successfully access across the PE curriculum (Wrotniak et al., 2006) and into adulthood. The more games or activities they can access successfully, the more they will experience feelings of enjoyment and the more motivated they will become. Both of these factors increase the likelihood that individuals will improve their performance and continue to participate (Deci & Ryan, 2000; Welk, 1999).

However, acquiring the fundamental motor skills required to access team games is a fairly complex process. This is because of the highly dynamic, decision-making contexts in which the skills have to be executed. Even the most basic skills have to be performed within this environment and performed, not as an end in itself, but as a means of reaching a specific goal. The decisions that have to be made about the most appropriate skill to execute are cognitive in nature and are based on the players'

knowledge of the game, its objectives, principles and the tactics associated with the game and the team. Teachers can facilitate the development of this knowledge by encouraging children to apply skills such as critical thinking, problem solving, reflecting, observing and discussing. All of these are skills that contribute to pupil development within the cognitive domain and can transfer across a range of learning environments. Importantly, they are skills that contribute to the development of pupils' decision-making in TIG. Decision-making both on and off-the-ball in TIG is particularly important because successful game play performance is dependant on players knowing what to do and when to do it. Players who are less skilful in TIG can still access the game with some success, but success is seriously limited for those individuals who do not possess adequate game knowledge and decision-making skills.

In summary, TIG play a very important role within PE in Scotland. In learning to play TIG, pupils develop affective, psychomotor and cognitive skills that they can use to facilitate their participation in physical activities for a lifetime. Moreover, the successful development of such skills is largely dependant on the way in which teachers deliver TIG within the PE curriculum.

1.4: Statement of the Problem

The Scottish Health Survey (Scottish Executive Health Department, 2003) reported that children's participation rates in physical activity begin to decline as early as age 4 for both boys and girls. This decline is much steeper for girls than boys, so much so that by the time girls reach their teens, only 35% of girls reach the recommended

levels of physical activity. This finding is somewhat paralleled in the results from the Littlefield et al. study (2003), where it was highlighted that girls only make up 29% of the student population that elect to take Standard Grade Physical Education. The Review Group on PE (Scottish Executive, 2004a) stated that young children are increasingly disengaged from PE and physical activity because they do not see the relevance of the activities that are offered to them from within the 'traditional' curriculum, for example, TIG. Consequently, the group recommended that children should be offered more choice from a curriculum that is made up of a wider, more varied array of physical activities; activities that reflect the current trends of society, for example, yoga, martial arts and skate boarding. This, the group believes, will increase interest, participation, have a positive impact on health and well-being and encourage continued participation in physical activity for a lifetime. However, the claim that children do not see the relevance of the more traditional curricular activities, and that this affects their participation in PE and physical activity, is not underpinned by any empirical research. Indeed, TIG play a very large part in curricular PE within Scottish Independent Schools, yet this does not appear to have a negative influence on the pupils desire to take part in physical activity of their own volition. Sixty-one percent of the pupils from the independent sector in Scotland choose to take part in extra-curricular team games compared to the national average of twenty-three percent (Littlefield et al., 2003). This raises a very important question about whether or not lack of participation in 'traditional' PE and physical activities is really caused by the types of activities presented in schools, or if there are alternative explanations. Moreover, previous research suggests that children opt out of PE and physical activity because of their low levels of perceived physical

competence and the negative affective responses associated with this, such as decreased levels of enjoyment and intrinsic motivation (Corbin, 1999; Weiss & Ferrer-Caja, 2000).

The place of TIG within the PE curriculum in Scotland seems to be well founded, yet their position within the PE curriculum in Scotland may be under threat in order to make way for a wider curriculum and more choice. However, since the Review Group on PE (Scottish Executive, 2004a) do not base their recommendations on any sound empirical evidence, the reasons for such changes to the PE curriculum may be unjustified. The purpose of this thesis, therefore, was to investigate the perceptions of both teachers and pupils in relation to their TIG experiences within a Scottish PE curriculum. An additional purpose of this thesis was to examine the delivery of teaching TIG in order to understand current 'traditional' teaching approaches, as well as 'alternative' teaching approaches, to determine the effects they have on pupils' TIG performance, enjoyment and intrinsic motivation. The results from this thesis may contribute to future, more informed, policy decisions about curriculum change and innovation in Scotland.

1.5: Aims of the Study

- To investigate pupils' experiences and perceptions of TIG within the contexts of their PE lessons.

- To investigate the ways in which teachers deliver TIG and the knowledge and beliefs that underpin their teaching approaches.

- To investigate both the outcomes (knowledge and game performance) and the processes (pupil experiences, teacher thoughts and motivational climate) involved in teaching S1 basketball using a game-based approach compared to a traditional, skill-focused approach.

A comprehensive review of literature relating to teaching and learning TIG was undertaken in chapter 2. This review describes the current situation in Scotland in relation to curriculum policy and children's physical activity levels. It then highlights the key factors that influence pupils' participation in physical activity and TIG, underpinned by theory that explains the development of self-determined behaviour. It was also important within the review to examine different teaching approaches and the theory that supports teaching and learning TIG.

Since it has been claimed that pupils in schools in Scotland cannot relate to the activities that are taught in the more 'traditional' PE curriculum, and this claim does not appear to derive from any empirical, Scottish-based research, the purpose of chapter 4 was to investigate pupils' perceptions of and experiences in TIG within the

PE curriculum. In doing so, it analysed pupils' perception of competence, enjoyment and the value they attach to games such as soccer and basketball. It was not only important to understand the ways in which pupils perceived TIG within the PE curriculum, it was also important to access teachers' thoughts about TIG within the PE curriculum. Additionally, since perception of competence appears to play an important role in the experiences of pupils, it was necessary to investigate the ways in which teachers delivered TIG within the PE curriculum. The purpose of chapter 5, therefore, was to explore the teachers' beliefs about their PE curricula, their pupils, TIG and teaching TIG.

The purpose of chapter 6 was to investigate the effects a game-based approach had on pupils' knowledge, perception of decision-making ability and game play. This study examined the effects of providing pupils with opportunities to explore and understand authentic game contexts in order to develop game movements and game understanding, compared to traditional and authentic teaching in a Scottish secondary school. Chapter 7 aimed to compare the two teaching approaches, a game-based and a skill-focused, in three main areas. Firstly, this study aimed to measure the effects each approach had on S1 pupils' perception of competence in, enjoyment of, and value they attached to basketball when they were taught over a five-week period. Additionally, this study aimed to identify the motivational climate created when teaching basketball using both approaches. Finally, pupils' and teachers' thoughts about their experiences during each basketball lesson were gathered and analysed to understand more about the teaching and learning processes linked to each approach.

This thesis concludes with a general discussion and conclusion in chapter 8 that consists of a summary of the findings from each study, the practical implications and recommendations for future research.

Chapter 2: Review of Literature

2.1: The Review Group on Physical Education and Team Invasion Games

Recent government publications (Scottish Executive, 2004a; Scottish Executive, 2004b) have recommended the need to review, amongst other things, the content that is being delivered within the Scottish Physical Education curriculum. The Review Group on Physical Education (PE) (Scottish Executive, 2004a) claims that young people are opting out of PE (and physical activity) partly because they do not find the activities presented in the traditional curriculum, for example soccer and field hockey, particularly relevant. Consequently, the PE Review Group recommended extending the PE curriculum to include a wider, more diverse range of physical activities, for example 'lifetime' activities such as skateboarding and yoga. The PE Review Group believes that this will provide pupils with more meaningful activities and more choice. This will encourage pupils to engage in PE and continue to be physically active into adulthood (Scottish Executive, 2004a). One of the problems with this recommendation is that there is little, if any, evidence to suggest that pupils in Scottish schools are unable to relate to the more traditional curriculum, and in particular team invasion games (TIG). Indeed, Green (2002a) highlighted that young people enjoy sport (including traditional team games) on an unprecedented scale, but that such popularity is contingent on it being 'presented appropriately' within PE.

TIG such as hockey, rugby and soccer play a very important and prominent role within the Scottish PE curriculum. Not only do they have a key role to play from a historical and cultural perspective (Bairner, 2000; Massie, 2000), but also from the

point of view that successful performance in TIG requires the development of cognitive, affective and psychomotor skills (Griffin & Sheehy, 2004; Theodoulides, 2003; Williams & Hodges, 2005) which lay the foundations for continued participation in physical activity after school and into adulthood (Bailey et al., 2008; Mandigo & Holt, 2004; Wrotniak et al., 2006). Moreover, developing performance in TIG can provide pupils with short bouts of intermittent activity that can stimulate physiological changes that benefit children's health (Coyle, 2005; McMillan et al., 2005; Ratel et al., 2004).

2.2: PE and Physical Activity Participation in Schools

Scotland has one of the highest mortality rates in Europe from diseases linked to obesity and lack of activity such as coronary heart disease, strokes and cancer (Scottish Executive Health Department, 2003). Moreover, there has been a rapid increase in overweight and obese children in Scotland, which can have an adverse effect on their physical and psychosocial health (Hughes et al., 2007). This problem is augmented by the fact that a growing number of young people seem to be opting out of PE and physical activity (Samdal et al., 2006; Scottish Executive, 2004b; Scottish Executive Health Department, 2003). Schools, therefore, play an important role in educating young people about leading a healthy lifestyle and encouraging them to take part in PE and physical activity. These processes are enhanced when pupils feel a sense of belonging to the school (Carter et al., 2007). Carter et al. (2007) found that those pupils who had a strong connection with their school were more likely to exhibit positive health promoting behaviours such as participating in physical activity and healthy eating, compared to pupils who felt disengaged from

their school. Consequently, it is accepted that PE in Scotland should play a major role in making a contribution to the health and well-being of young people (Scottish Executive, 2004a; Scottish Executive, 2004b). However, this view fails to take account of the growing disquiet in recent years over the critical issue of whether PE should be held accountable for children's health (Kirk, 2006). Additionally, Kirk (2006) claims that there is little evidence to show that children's fitness and physical activity levels are actually deteriorating, although there is some evidence to suggest that this may not be the case for all children when factors such as socio-economic status are taken into account (Dollman et al., 1999; Inchley et al., 2005; Brettschneider & Naul, 2004). Westerterp and Speakerman (2008) suggest that factors other than lack of physical activity are responsible for the obesity epidemic. In their investigation into energy expenditure since the 1980's, they found that energy expenditure has not declined in the same period that obesity has dramatically increased.

Part of the role of PE should be to develop the skills required to lead a healthy lifestyle (Kirk, 2006). However, it could be argued that these skills should not be the main, or the only focus of PE. Indeed a report by Her Majesty's Inspectorate of Education (HMIE) on Primary PE (2001) praised schools that provided pupils with opportunities to take part in a broad and balanced curriculum that included 'games, sports, gymnastics, dance and swimming' (p. 11). Moreover, a report by HMIE on Secondary PE (1995) cautioned PE departments who provided 'fitness' activities such as strength training or aerobics, stating that fitness can be pursued legitimately through focussing on improvements in performance rather than only on health.

Changes to the PE curriculum in Scotland are looming, yet the evidence supporting such change appears to be rather ambiguous. Assertions have been made that more pupils are opting out of physical activity (Samdal, et al., 2006; Scottish Executive, 2004b; Scottish Executive Health Department, 2003) and there is evidence to suggest that there is a rapid increase in overweight and obese children in Scotland (Hughes et al., 2007). However, there appears to be a dearth of empirical research that has been conducted to examine *why* this may be the case.

2.3: Children and Physical Activity in Scotland

Research that has been carried out in Scotland demonstrates that children as young as age 10 are opting out of physical activity (Scottish Executive Health Department, 2003). In an investigation into physical activity patterns, TV viewing, eating habits, body image and oral hygiene, Alexander et al. (2004) found that only 34.8% of Scottish boys and 22.8% of Scottish girls were meeting the recommended amount of moderate to vigorous physical activity by the age of 15. However, there has been a limited amount of research carried out in Scotland to find out exactly *why* children choose to participate, or not participate in physical activity. In an earlier investigation into the physical activity patterns of school children in Scotland, Alexander et al. (2003) found that there were a range of psychological, social and environmental factors associated with young people's physical activity patterns. However, the questionnaire that was used for this investigation did not make it possible for the authors to explore the key issues in any depth. The survey included questions about enjoyment and confidence in ability (psychological factors), perceptions of safety and local opportunity (environmental factors) and participation with parents and

friends (social factors). With only two measures/statements linked to each factor, the amount of detail that could be obtained about the nature of children's reasons for opting out of physical activity was limited. Additionally, from a PE perspective, it is very difficult for teachers to have any control over factors such as 'perceptions of safety' or 'participation with parents'. However, teachers can have some control over psychological factors such as enjoyment and confidence in ability, both of which are related to pupil motivation to participate in physical activity.

2.4: Self-Determination Theory, Cognitive Evaluation Theory and Intrinsic Motivation

> The fullest representations of humanity show people to be curious, vital, and self-motivated. At their best, they are agentic and inspired, striving to learn; extend themselves; master new skills; and apply their talents responsibly. That most people show considerable effort, agency, and commitment in their lives appears, in fact, to be more normative than exceptional, suggesting some very positive and persistent features of human nature...Yet, it is also that the human spirit can be diminished or crushed and that the individuals reject growth and responsibility. (Deci & Ryan, 2000, p. 68)

A theory of human motivation that provides a comprehensive framework for explaining motivated behaviours in PE and sport participation is Self-Determination Theory (SDT) (Deci & Ryan, 2000). SDT examines the characteristics and needs of the individual and the environmental conditions in which the individual acts. The intention of this theory is to determine the extent to which actions carried out by the individual are self-motivated and self-regulated or whether they are driven by external forces. SDT begins with the premise that there are three main psychological needs that motivate human behaviour: autonomy, competence and relatedness to others. From a participation motivation perspective, autonomy and competence are

particularly important because satisfaction of these needs have been shown to be necessary for intrinsically motivated behaviour (Frederick-Recascino, 2002).

A sub-theory of SDT that is particularly important in relation to continued participation in physical activity is Cognitive Evaluation Theory (CET). CET focuses on the role of intrinsic motivation on self-determined behaviour and highlights the importance of feelings of competence and autonomy in relation to sustaining and/or increasing levels of intrinsic motivation. Intrinsic motivation is important because it is the inherent tendency that drives individuals to take part in physical activity. All humans are capable of being intrinsically motivated. However, this capability can be influenced either positively or negatively by the environmental conditions the individual is exposed to.

CET suggests that environments that positively influence pupils' perception of competence and autonomy will increase their intrinsic motivation levels. For example, perception of competence is enhanced when individuals experience optimal challenges, positive performance feedback and freedom from demeaning evaluations. Additionally, feelings of autonomy are enhanced when the learning environment provides opportunities for self-direction and allow the learner to make choices and express their feelings (Deci & Ryan, 2000). Accordingly, both feelings of competence and autonomy increase intrinsic motivation, which in turn has a positive impact on learning. Research investigating the effect of feelings of competence and autonomy on intrinsic motivation has found that both are promoted in an environment that is described as 'autonomy-supportive', compared with one which is

described as 'controlling' (Vansteenkiste et al., 2004). An autonomy-supportive environment is created when the teacher 'minimises the salience of external incentives, avoids controlling language, and acknowledges the learner's frame of reference.' (Vansteenkiste et al., 2004, p. 247). Blanchard and Vallerand (1996) found that when basketball players perceived their coach to be autonomy-supporting, they felt more competent, autonomous and connected with their team-mates. This resulted in higher levels of intrinsic and self-determined extrinsic motivation. Additionally, autonomy-supporting learning environments encourage deeper processing, better conceptual learning and persistence in the task (Vansteenkiste et al., 2004). In contrast, a controlling environment, where the learner is pressurised through the use of punishments, incentives and deadlines has been found to hinder learning as a result of poorer conceptual learning and task persistence (Vansteenkiste et al., 2004).

PE teachers should, therefore, understand the factors that both facilitate and undermine an autonomy-supportive environment. For example, rewards have generally been found to undermine intrinsic motivation (Deci & Ryan, 1987). People who work on a task for a specific reward display less interest and willingness to work after the termination of reward than those who worked without reward. When rewards are structured so that they are independent of task engagement, or when they focus on the positive aspects of the learner's competence, intrinsic motivation can be sustained or enhanced. Other important factors to take into account, because they have been shown to undermine intrinsic motivation, are fear of negative evaluations (FNE), threats and deadlines. Girls in particular are more likely to exhibit avoidance

behaviours in PE because they fear that their peers will negatively evaluate their performance (Ridgers et al., 2007). However, this may also be as a result of the relationship between FNE and perception of competence in PE. In an investigation into the relationship between FNE and perception of competence in PE, Ridgers et al. (2007) found that girls had higher levels of FNE and lower perceptions of competence compared to boys and that these differences were more pronounced with the older girls. Wrotniak et al. (2006) suggested that the differences between boys' and girls' perception of competence in PE could be due to the fact that boys are more likely to play games such as soccer and rugby from a young age, thus developing both specific and fundamental skills that transfer to activities in PE and potentially contribute to their increased perceived competence in PE. Since perception of physical competence in PE is one of the most important determinants of pupils' continued participation in physical activity (Corbin, 1999; Welk, 1999), this is perhaps why boys are less likely to opt out of PE and physical activity as they grow older compared to girls (Scottish Executive Health Department, 2003).

2.4.1: Perception of competence.

Perception of competence refers to the individual's belief about his/her ability in an achievement domain, and is developed as a function of previous mastery experiences, enhanced by practice as well as teaching strategies such as feedback and modelling (Alderman, 2003). Perceived competence is also a very strong predictor of intrinsic motivation and can influence subsequent motivated behaviours such as selecting challenging tasks, applying effort and persistence (Weiss & Ferrer-Caja, 2000). Additionally, learning environments that facilitate improvements in

performance and perceived competence increase the likelihood that those children will continue to participate in physical activity (Klint & Weiss, 1987). In a study that examined the relationship between perception of competence and motives for participating in physical activity, Klint and Weiss (1987) found that children who were rated as high in perceived competence valued skill learning more than those with low perceived competence and were more willing to apply effort to increase their competence levels.

Research suggests that there is a difference between the ways in which young children perceive their physical competence compared to adolescents (Xiang et al., 2001). This difference could go some way to explain why there is such a dramatic fall in participation levels as young children move towards adolescence (Scottish Executive Health Department, 2003). Young children have a limited cognitive capacity and are therefore unable to distinguish between effort and ability (Welk, 1999). This means that they evaluate their competence based on how much effort they apply to a task. However, as children develop, their cognitive capacity increases and they have a greater understanding of what it takes to improve their performance, for example, increasing task difficulty, sustaining effort and use of learning strategies. They also become more able to evaluate their performance by comparing it to previous attempts, model performers and assessing the outcome of their performance. This knowledge makes it possible for them to form a connection between their perceived competence and their actual competence and, when actual competence is high, perceived competence is high. This is true even for adolescent girls who are known to be more likely to drop out of physical activity than

adolescent boys. Corbin (1999) asserts that when girls are high in actual competence they have no problem with participating in physical activities, even those typically defined as masculine, for example soccer and rugby. Supporting this view, Fairclough (2003) found no difference between boys and 'physically active' girls in an investigation that measured both perceived competence and enjoyment in PE. Equally, however, adolescents' increased cognitive capacity means that they are more able to recognise when their actual competence is poor. In many cases, this results in low levels of perceived competence, which can have a negative impact on motivation, willingness to apply effort to improve and willingness to continue to participate.

Importantly, both children and adults are more motivated to take part in activities that enable them to demonstrate competence, and are more likely to drop out or avoid activities in which they do not expect to perform well (Bandura, 1986; Ridgers et al., 2007; Standage et al., 2007). This may also be because those with greater movement competence find it easier to engage in physical activity. Conversely, those who are less skilled find participating in physical activity more difficult. Moreover, research has shown that children with the poorest motor skills are most at risk from leading sedentary lifestyles (Okely et al., 2001; Petrolini et al., 1995; Wrotniak et al., 2006). In contrast, increased proficiency in PE is linked to the development of positive attitudes towards PE and continued participation in youth physical activity (Wrotniak et al., 2006).

2.4.2: Enjoyment.

In addition to perception of competence, the extent to which an individual enjoys an activity can either positively or negatively affect intrinsic motivation. Research that has investigated the relationship between enjoyment and participation in physical activity has found that both enjoyment and perception of competence are important factors in determining effort, persistence and continued participation in physical activity (Frederick & Ryan, 1993; Ryan et al., 1997). Additionally, Wang and Liu (2007) found that relative autonomy, task orientation and perceived competence had strong and direct impact on girls' enjoyment of PE. Moreover, Carroll and Loumidis (2001) found that pupils who perceived PE to be less enjoyable did not participate less in PE but participated as less intensely. Welk (1999) found that enjoyment was one of the most commonly cited reasons for children's participation in physical activity. In a qualitative examination of children's perceptions of physical activity, Macdonald et al. (2005) found that all of the children (n=13) in their study engaged in physical activity because they perceived it to be fun. Fairclough (2003) emphasised that both interest and enjoyment are consequences of intrinsic motivation and that both factors influence behaviours such as effort and persistence in task engagement. In their investigation into intrinsic motives and physical activity adherence, Ryan et al. (1997) considered enjoyment and competence as the key determinants of participants who were intrinsically motivated. They found that participants who took part in physical activity as a result of enjoyment and competence motives showed better adherence to physical activity and that enjoyment was a predictor of exercise adherence. Frederick and Ryan (1993) investigated the participation motives of a group that took part in health-related activities such as

aerobics compared to a group that took part in sporting activities such as tennis. They found that those participants who took part in more sport-related activities were more intrinsically motivated and that this was related to both enjoyment and competence. Additionally, they found that enjoyment and competence motives for participation were positively associated with hours per week of participating, perceived competence and overall satisfaction with the activity.

2.4.3: Value/Interest.

Participation in physical activity is also related to the interest the individual holds for a particular activity, or in other words, when the activity is compatible with his/her expectancies and values. If something is interesting, it has a prominent position in the individual's hierarchy of values and this directly influences achievement, performance, persistence and choice (Krapp, 2002). Wigfield (1994) proposes that as children develop, they attach value to the things that they can do well and Bandura (1997) argues that children's interest in an activity emerges out of a sense of self-efficacy.

Chen (1996) found that children's personal knowledge and values affect the ways they construct interest. Importantly, the formation of interest in an activity can be influenced by the curriculum and the quality of instruction concerning the topic. Chen (1996) suggests that in order to increase the likelihood a child will show an interest in an activity, teachers should encourage him/her to explore multiple meanings of the physical activity context, thus influencing the learner's situational interests. This is the meaning that an individual gives to the context of the activity, or

the 'functional significance' of the activity (Deci & Ryan, 1987). This leads to better learning because it encourages a higher degree of conceptual thinking (Hidi & Berndorff, 1998). Situational interest is also influenced by the development of physical competence (Chen & Darst, 2002). Moreover, it can assist in the development of personal values, which has a positive influence on intrinsic motivation (Deci & Ryan, 2000).

In summary, pupil motivation to participate in physical activity can be influenced by environmental factors in PE. SDT is a theoretical construct that explains how both personal characteristics and environmental conditions affect the self-motivation and self-regulation of an individual's behaviour. CET, a sub theory of SDT, highlights the role of intrinsic motivation in physical activity participation. Intrinsic motivation is an inherent characteristic that drives people to engage in an activity in order to enhance learning and performance in a self-determined and self-regulated way. Increased feelings of competence and autonomy can nurture and enhance intrinsic motivation, as can tasks that are both enjoyable and of interest to the learner. Creating a learning environment that caters for these demands may increase pupil engagement levels, improve performance and increase the likelihood that the individual will want to continue to participate in the activity. Therefore, the way in which teachers in Scottish schools teach PE and TIG may be a key factor in pupils' participation in PE and their continued participation in physical activity.

2.5: Teaching TIG

2.5.1: The traditional approach.

Traditionally, TIG have been taught using a teacher-centred, skill-focused approach with the aim of developing and refining specific game skills outwith the context of the game. Only once the skills have been practised are the pupils provided with opportunities to apply the skills in the game. The skills are usually practiced through repetition and progressive tasks that move from closed to open situations. In this way, the pupils can focus on key technical components of the skill and replicate a model performance provided to them by the teacher (Williams & Hodges, 2005). The teacher facilitates this process by providing feedback to the pupils, feedback linked to predetermined technical components of the skill. Teachers teach in this way because they believe that children will not be able to access the game unless they are able to perform the game skills first. However, when the practice environment is detached from the game, many children do not see the relevance, meaning or value in their actions. Consequently, they lose interest, motivation and apply less effort to their learning (Deci & Ryan, 2000). Also, in adopting this skills-first approach, learners often find it difficult to transfer their previously 'learned' skills into the game. When the skills are removed from the game context, pupils do not develop an understanding of the situations during the game that necessitate the application of such skills. In other words, they do not develop decision-making skills. Lack of game knowledge and subsequent inability to make decisions about when and why to execute the skills during the game make transfer from deliberate practice to game-play very difficult. This may also result in increased errors in game performance and

subsequent lack of motivation, effort and enjoyment (Deci & Ryan, 2000; Ridgers et al., 2007; Wrotniak et al., 2006).

Another problem with the traditional approach to TIG teaching is that the focus of learning is on how the individual performs on-the-ball skills. Consequently, when pupils fail to develop their skills at the same rate as others, or make errors on-the-ball, this could lead to a fear that their peers and/or teacher will negatively evaluate their performance. Often, this can result in avoidance behaviours (Carr, 2006) or self-handicapping behaviours (Standage et al., 2007), particularly with pupils low in perceived competence (Ridgers et al., 2007). Another problem with focussing on on-the-ball skill development is that the majority of a player's performance in TIG takes place off-the-ball. It is extremely important to develop off-the-ball skills so that pupils learn to develop their performance as a team and, so that individual pupils feel like they are making a contribution to the team's performance even when he/she does not have the ball (Papaioannou et al., 2006). Supporting this, Blomqvist et al. (2005) argue that if off-the-ball play is ignored in games teaching, then pupils will not develop their game performance to the desired level.

2.5.2: *Mosston's teaching styles.*

This traditional skills-first teaching approach is reflective of the reproductive teaching styles from Mosston's Spectrum of Teaching Styles (Mosston & Ashworth, 2002). Mosston identified a range of eleven teaching styles based on a gradual shift of decisions from the teacher to the pupil. Furthermore, the styles vary according to their ability to encourage pupils to reproduce or produce knowledge. Within the

reproductive cluster, the teacher makes the majority of the decisions and attempts to influence the ways in which the learner uses predetermined knowledge. Within the productive cluster, the pupils are encouraged to take responsibility for their own learning in order to discover 'new' knowledge (Mosston & Ashworth, 2002).

Sicilia-Camacho and Brown (2008) highlight that, although using a variety of teaching styles is perceived to be the hallmark of effective teaching, often this results in the deployment of teaching styles in order to meet the demands of the curriculum, rather than the needs of the pupils. Moreover, research into the use of Mosston's teaching styles within PE has demonstrated that teachers use the reproductive styles more than the productive styles (Cothran et al., 2005; Curtner-Smith, 1999; Kulinna & Cothran, 2003). This may be because reproductive styles have been shown to be effective in developing motor skills (Goldberger & Gerney, 1986) and since the focus for many PE teachers when teaching TIG is on the development of motor skills, the application of reproductive teaching styles in PE would appear to be appropriate.

In an investigation into the effects different teaching styles have on pupils' cognitive and affective responses in PE, Morgan et al. (2005a) identified specific teaching behaviours that may contribute to pupils' enjoyment of, and improved competence in athletics activities when pupil-centred teaching approaches (reciprocal and guided discovery) were used. They found that when the teachers used more pupil-centred teaching styles, they exhibited more behaviours associated with the creation of a mastery motivational climate, such as the emphasis of self-referenced behaviours,

improvement and effort. In contrast, when the teacher used the teacher-centred styles, they exhibited more behaviours associated with the creation of a performance motivational climate. For example, they encouraged comparisons in order to highlight improvements in performance. These results are important because the creation of a mastery motivational climate has been shown to increase effort, ability and success within PE (Morgan et al., 2005a).

2.5.3: *Motivational climate.*

Motivational climate is based on Achievement Goal Theory, which suggests that individuals strive to demonstrate competence and avoid demonstrating low ability when they are placed in achievement settings such as PE (Ames, 1992; Dweck & Leggett, 1988; Nicholls, 1984, 1989). Achievement Goal Theory supports that individuals can approach learning tasks in two ways depending on whether they view the concept of ability as differentiated or undifferentiated. An undifferentiated conception of ability is when the individual does not distinguish effort from ability and a differentiated conception of ability is when individuals view ability as capacity and perceive that competence involves outperforming others (Morgan et al., 2005a). Undifferentiated conception of ability is linked to task involvement and differentiated conception is linked to ego involvement (Nicholls, 1984). Morgan et al. (2005a) describe how those individuals who are task involved define success or competence in self-referenced terms, for example greater mastery and improvement. Those individuals who are ego involved define success in norm-referenced terms. Importantly, these two types of goal involvement are not fixed since they are related

to the individual's predisposed goal orientations and to environmental factors such as the motivational climate.

There are two different types of motivational climate that can be created in PE: mastery and performance. A mastery climate is when the teacher focuses on self-referenced improvement and effort and success is defined as improving one's personal best achievements. A performance climate is created when the teacher encourages normative comparisons and pupils' success is judged in relation to the performance of others. Previous research has demonstrated that the creation of a mastery climate is related to adaptive motivational responses, such as a belief that success is due to effort, high satisfaction in learning, high intrinsic motivation, low boredom, choosing more challenging tasks and developing a positive attitude towards the activity (Carpenter & Morgan, 1999; Parish & Treasure, 2003; Treasure, 1997). Conversely, perception of a performance climate is linked to maladaptive motivational responses such as the belief that success is the result of ability, choosing to perform in non-challenging tasks, low perception of ability and a negative attitude. Moreover, when learners perceive the climate as high-task involving, they are more likely to adopt task orientations; if they perceive the learning climate as ego-involving, they adopt ego orientations (Ames, 1992; Biddle et al., 1995).

In order to create a mastery climate, Ames (1992) suggests that tasks should be multi-dimensional, designed for variety and enjoyment and are differentiated to meet the needs of all pupils. Moreover, the teacher should encourage pupils to make decisions, organise heterogeneous, co-operative groups, and focus their recognition

and rewards on effort and improvement. Additionally, time on task should be maximised and evaluation should be self-referenced. These teaching behaviours are based on teaching structures originally identified by Epstein (1989). Namely the task, authority, recognition, grouping, evaluation and time and are represented as the acronym TARGET.

Research investigating the effects of manipulating these TARGET structures in order to influence the motivational climate has found that implementing a mastery climate has a positive influence on performers' cognition, affect and behaviour (Ntoumanis & Biddle, 1999). When a mastery motivational climate is created in PE lessons, pupils report higher levels of enjoyment, perceptions of competence, intrinsic motivation and a positive attitude towards PE (Morgan et al., 2005a; Morgan & Carpenter, 2002; Morgan et al., 2006). Weiss and Ferrer-Caja (2000) found that when the PE teacher focused on self-improvement and self-directed learning and evaluation, pupils viewed their ability more highly. Fairclough (2003) established that an individual's perception of competence increases when the teacher sets individually differentiated tasks, allows students to work at an appropriate level of challenge and provides positive feedback specific to pupils' performance. Intrinsic motivation is enhanced when the teacher encourages pupils to apply self-referenced criteria for improvement in their performance because the controlling nature of interpersonal comparisons is reduced (Ntoumanis, 2001; Ommundsen & Kvalo, 2007). This in turn increases the likelihood that pupils will apply effort in learning and may improve their performance (Deci & Ryan, 2000; Weiss & Ferrer-Caja, 2000).

Creating a mastery motivational climate when teaching TIG, therefore, may increase pupils' intrinsic motivation to learn and, as a result, have a positive effect on both their perception of competence and actual competence. Unfortunately, direct teaching styles, which are linked to the creation of a performance motivational climate, still dominate teaching in Scotland and the UK (Capel, 2007; Morgan et al., 2005a; Thorburn, 2007). Alternative, pupil centred approaches to teaching TIG have been developed (Bunker & Thorpe, 1982; Cote & Hay, 2002; Griffin et al., 1997; Launder, 2001; Siedentop, 1994), however, there is very little evidence that these are common practice in schools in Scotland and no research to date has examined the relationship between these alternative approaches and motivational climate within PE lessons in Scottish schools.

2.6: Alternative Approaches to Teaching TIG

2.6.1: Sport Education.

Sport Education (Siedentop, 1994) is an approach to games teaching that provides pupils with real sport experiences. It is a pupil-centred curriculum model, within which pupils learn to plan, manage and run their own sports season as part of their PE programme. The teacher's role is one of facilitator rather than director of activity and pupils adopt the role of coach, leader, official, administrator and manager as well as player/performer (Hastie, 2004). The season is presented during the initial PE lesson and often lasts for a complete term. Pupils are selected into teams so that there is a mixture of ability levels and they adopt different roles, which are likely to include, player/performer, coach, equipment manager, umpire and scorer. Formal competition plays a key role within this model. It gives the season its structure and

meaning and is usually pre-arranged so that teams can organise practices around their matches. The focus of learning is on developing both individual and team performances. This means that pupils have to be aware of not only the skills required for effective performance in games, but also the game rules, principles and tactics. Research investigating Sport Education programmes highlight positive outcomes such as the development of social skills (Hastie, 1996) and feelings of affiliation (Ennis, 1999). Additionally, Hastie (1998) found that girls enjoyed Sport Education because they were given equal opportunities to contribute in class as opposed to traditionally being overlooked.

2.6.2: Game-based teaching approaches.

Other approaches to games teaching focus on understanding the game context, rather than on learning game specific skills. For example, Deliberate Play (Cote & Hay, 2002) is an approach that provides children with games that are designed to maximise inherent enjoyment. They are regulated by rules adapted from standard sport rules and, importantly, they require the development of both techniques and tactical understanding. Other 'alternative' games teaching approaches include the Tactical approach (Griffin et al., 1997) and Play Practice (Launder, 2001). Like Deliberate Play, they aim to develop players' technical and tactical performance by teaching through the game, or simplified 'game-like' situations.

All of these approaches are derived from the Teaching Games for Understanding (TGfU) approach (Bunker & Thorpe, 1982). This is a game-based approach that evolved from concerns about the way games were being taught in schools. Children

were leaving school knowing very little about games and having had very little success in playing games. The founders aimed to challenge traditional games teaching by presenting a more tactical approach where understanding the game through games play is the goal, rather than the acquisition of sport specific skill. With this approach, games are categorised (invasion, net and striking/fielding) to highlight the similarities between games in terms of their structure and objectives. Consequently, teachers become facilitators of game knowledge rather than facilitators of game specific motor skills. Game specific motor skills are introduced only after the learners have acquired the appropriate game knowledge. Additionally, since game knowledge is said to be related to decision-making (Blomqvist et al., 2005; Williams & Davids, 1995), then improved game understanding not only makes skill learning more meaningful, but also contributes to the development of the learner's decision-making abilities (Hopper, 2002).

In order to focus on the development of tactical understanding in the early stages of learning, the concept of simplification is advocated. Simplification is where the more complex, sport specific motor skills are either simplified or removed from the game. For example, in soccer, learners may be encouraged to catch and throw the ball rather than send and receive by foot. This allows children to concentrate on developing their understanding of the game, thus improving their decision-making both on and off-the-ball (Turner & Martinek, 1995). However, one of the problems with this is that by removing or simplifying the game skills, the players do not develop the type of decision-making skills that impact on their overall playing proficiency, skills which include technique selection and execution. Learning the specific skills of the game is crucial to effective game performance and importantly,

they can be learned within the context of the game or a modified game situation. Motor learning theorists believe that learning skills within such contexts is consistent with the principles of variable and random practice (Williams & Hodges, 2005). Although learning in this type of environment can result in a slower rate of skill progression, skill learning over an extended period may be enhanced because contextual interference (a functional interference that increases cognitive effort in learning) is increased. Additionally, playing 'generic' games by removing the specific skills from the game violates the concept of specificity of practice and could lead to negative transfer when the 'real' game is introduced (McMorris, 1998). However, the concept of simplification should only be applied in the early stages of learning. Furthermore, those who advocate this approach maintain that it enhances the acquisition of motor skill because learners understand the need to develop technique in order improve their overall game performance (Hopper, 2002).

Research that has investigated skill development when TGfU is adopted has not provided any conclusive evidence that TGfU leads to superior skill development when compared to traditional skills first approaches (French et al., 1996a; French et al., 1996b; Mitchell et al., 1995; Turner & Martinek, 1992). Importantly, these investigations do not show that teaching using TGfU is detrimental to skill development. Turner and Martinek (1992) for example, found no significant differences in skill levels when TGfU and skill-focused approaches were used to teach field hockey. More recently, Harrison et al. (2004) showed that both teaching approaches resulted in improved volleyball skills from pre and post-intervention. However, research into the effectiveness of TGfU has found that learners developed

better tactical knowledge and decision-making on and off-the-ball as well as increased enjoyment and intrinsic motivation when compared to more traditional skills-based approaches (Allison &Thorpe, 1997; Jones & Farrow, 1999; Turner & Martinek, 1999).

The Tactical approach (Griffin et al., 1997) accepts that the game is the central focus and recognises that skill learning is vital to the development of decision-making ability. Consequently, the aim of the Tactical approach is to combine the acquisition of motor skills and cognitive skills, both on and off-the-ball. In order to achieve this, teachers become facilitators of game knowledge and game movements. The role of the teacher is to select the tactical problem that has to be addressed. The learner then has to develop his/her understanding of the tactical problem and work out the most appropriate game specific motor skills to solve the problem. These skills are developed through question, answer and active participation in the game or game-like activity. The teacher has a less direct role in the learning process and pupils are given more responsibility for their own learning.

A number of studies have been carried out to investigate the Tactical approach to games teaching (Dodds et al., 2001; Mitchell & Oslin. 1999; Nevett et al., 2001; Rovegno et al., 2001). Mitchell and Oslin (1999), for example, investigated the development and transfer of decision-making skills from badminton to pickleball (short tennis) with ninth grade pupils and found that decision-making improved during the badminton sessions and that this improvement was sustained during the pickleball lessons. Written responses to structured questions also demonstrated that

the participants recognised similarities between the two games in terms of equipment, objectives and the concept of hitting the ball to a space.

Rovegno et al. (2001) used this approach in an investigation into teaching 4th grade aerial basketball where they aimed to develop pupils' passing and cutting skills. An important consideration for the researchers in the initial stages of this investigation was to identify the context in which passing and cutting takes place. This consideration shaped the design of the tasks and the way in which the teacher presented them:

> By this we mean cutting and passing are inherently social, derive their fundamental meaning from the game context, and that the concept of a skill and a tactic should not be separated. (p. 374)

Consequently, the teacher's role was to encourage the learners to perform a catchable pass by developing their understanding of the relationship between the passer and the receiver. The pupils were left to work out the action of the body parts used to throw the ball on their own. The results from this investigation demonstrated that as the pupils progressed through the four units of instruction, fewer passes at a less skilled level were made and more mature passes were made, although not always consistently. They also made more passes in front of the receiver, demonstrating an understanding of the relationship between the passer and the receiver. The researchers also found that any problems in performing the task did not result from the learner's immature movement pattern, but rather as a result of relational problems between the passer and the receiver, sometimes elicited by the receiver. This highlights the importance of practising skills within an environment that

encourages the learner to look for opportunities for appropriate actions and that focuses on what the learner does off-the-ball.

As part of the same investigation, Nevett et al. (2001) tested students' passing and cutting decisions in a 3v3 aerial basketball game and found improved decision-making after the 12-week unit of instruction. Additionally, Rovegno et al. (2001) interviewed the students and analysed the knowledge they acquired during the 12-week unit of instruction. They found an increase in the amount of tactical knowledge and linked this finding to the students' improved decision-making in the 3v3 aerial basketball game. The learners' tactical knowledge may have improved during this experiment because they were able to reflect upon and discuss tactics as well as actually play the game (Dodds et al., 2001). During the intervention, the students were not told what to do, they were presented with the game environment and questions were posed. The students had to explore the environment to come up with the tactical answers to tactical problems. Additionally, since the game was the focus, the learners understood why they had to learn passing and cutting thus making the whole learning process more meaningful.

With approaches like TGfU (Bunker & Thorpe, 1982) and the Tactical approach (Griffin et al., 1997) the game is the central focus and the aim is to develop pupils' overall game competence, including skill execution and decision-making (both on and off-the-ball). However, the game is also used to motivate pupils and to develop their understanding and appreciation of the game. The teacher has a less direct role in the learning process, encouraging pupils to solve problems, think critically, observe

and discuss, thus giving them more responsibility for their own learning. In summary, game-based, pupil-centred approaches to teaching TIG have the potential to improve pupils' overall game playing performance and enhance key affective constructs such as enjoyment, value and intrinsic motivation, constructs that are essential in the promotion of continued participation in physical activity. Furthermore, since there appear to be commonalities between the creation of a mastery climate and game-based teaching approaches in PE (e.g., problem solving, pupil decision-making and, varied and interesting tasks) this may explain why pupil performance seems to be enhanced when a game-based teaching approach is used in PE. However, to date, there has been no research carried out that has examined the relationship between game-based teaching approaches and motivational climate and, only a limited amount of research has been undertaken to examine the affective outcomes of approaches such as TGfU. Indeed, there has been no Scottish-based research carried out to investigate the effects of alternative approaches to TIG teaching (affective or behavioural) such as TGfU and the Tactical approach. This may be because these approaches have yet to make any significant impact on the practice of teachers in schools in Scotland, whereas they have made an impact in countries such as Australia, England and Singapore (Thorburn, 2007). In fact, not all teachers who have been exposed to game-based teaching approaches have accepted them as part of their pedagogical practices. Capel (2000) suggests that this may be because teachers are more familiar with technical approaches and are therefore more confident to teach this way. Supporting this view, Butler and McCahan (2005) noted that PE teachers continue to use technical approaches because this is they way they were taught when they were pupils. Kirk (2005) claims that teachers may be resistant

to TGfU because it exposes their lack of experience and game knowledge. In order to teach using game-based, tactical approaches teachers require an in-depth knowledge about effective performance, as well as the theory that underpins teaching and learning TIG. TIG are very complex in nature and for some teachers, developing such knowledge may not be easy.

2.7: Performance in TIG

In order to participate in TIG, pupils have to be able to execute a variety of complex, goal related motor skills within the context of a highly dynamic environment, under the pressures of time, space and within the boundaries set by the game rules and structures. Becoming proficient in the execution of game specific motor skills, therefore, is a very important component of overall game performance. However, skill proficiency on its own does not equate to overall games proficiency. Games proficiency also involves making the appropriate decision about when and how to execute the skill in order to achieve the desired outcome both on and off-the-ball, e.g., to dribble past defender or to lose a marking defender.

Decision-making in games begins when the performer searches for and selects relevant pieces of information about the game environment. Research has demonstrated that, not only can expert games players gather more meaningful information more quickly than novice games players, but that they can use this information more effectively to make more appropriate decisions about what to do and how to do it (Bard et al., 1994; Blomqvist et

al., 2005; Starkes 1987; Vaeyens et al., 2007). An important question that arises from this is how do experts actually use this information to make appropriate decisions? In other words, what are the processes involved between gathering relevant game information and skill execution? In an attempt to answer these questions, Starkes (1987) assessed a group of expert field hockey players in a range of perceptual and cognitive attributes. Starkes found that expert hockey players performed better in decision-making tasks not because of superior attributes such as fast reactions or coincident anticipation time, but because they had deeper, more sophisticated levels of declarative knowledge.

In games, declarative knowledge is factual information such as tactical knowledge (e.g. when and why to apply a zone or man-to-man defence) and knowledge of principles of play (e.g. keeping possession and creating width) (Williams & Davids, 1995). This type of knowledge is very important in decision-making because it is the foundation upon which effective decision-making skills are developed. Expert performers have more sophisticated levels of declarative knowledge and are able to use this to create conceptual relationships between the tactical problems they are faced with in games and the possible ways of solving these tactical problems. For example, in soccer, if a striker is attempting to score a goal against a goalkeeper, he/she should understand at least some, or even all of the following: the way the angles change when the goalkeeper moves, the way the angles change when the player on the ball moves, options available when the angles are large, options available when the angles are small. Through time and exposure to the game

(practice), the expert performer not only develops a deeper understanding of these principles but is also able to reduce and operationalise this knowledge to form procedural knowledge.

Procedural knowledge takes the form of a series of 'if-then-do' productions (for example, if the goalkeeper stays on his/her line, then shoot early). They are portions of knowledge that are directly applied to the situation, reducing demands placed on the performer and increasing the efficiency of performance. Novice performers, however, do not have the same depth of declarative knowledge as expert performers, nor are they able to identify the portion of his/her knowledge base (procedural knowledge) to carry out the task effectively. This can result in an incorrect response or a delayed and ineffective response (French & McPherson, 1999).

In summary, developing pupils' proficiency in games will depend fairly substantially on the parallel (and preferably linked) development of his/her knowledge about the tactics and the principles of the game being played, as well as the techniques required. Certainly, without the development of both declarative and procedural knowledge, the performer's ability to access the game will be seriously limited.

2.8: Complex Theories of Learning

Two theories of learning that have commonly been used to explain how this knowledge is developed within PE and TIG are constructivism (Wright, 2004) and situated learning (Kirk & Macdonald, 1998; Kirk & MacPhail, 2002). Constructivism focuses on the active role of pupils in building or constructing their

own understanding and performance. Consequently, the pupil is at the centre of the learning process, content is more meaningful and is learned more easily, and motivation is higher (Mawer, 1999). For teachers who draw on constructivism to inform their practice, there is usually a specific interest in problem-solving, critical engagement, reflection, critical refection and pupil-centred learning (Wright, 2004). They pay specific attention to how students make meaning, how they construct knowledge and how this can best be scaffolded. However, this means that teachers have to be ready and able to cater for pupils moving along multiple learning paths (Wright, 2004). They have to assess pupils' prior knowledge and use this to set tasks where the pupils apply this knowledge to construct new knowledge. Ultimately, learning takes place when the pupil is able to apply this new knowledge to novel situations (Richard & Wallian, 2005).

Situated learning theory is a form of constructivism that focuses on the social settings that construct and constitute learning. It offers a critical way to think about the relevance of knowledge, pathways to expertise and professional enculturation (Wright, 2004). Social and cultural contexts are fundamental components of what is learned and how it is learned. From this perspective, knowledge is not an integral and self-sufficient substance, independent of the context in which it is learned and used, but rather it is inseparable from context and from culture (Brown et al., 1989). It is constructed through social interactions within communities of practice, communities that are framed in culture. Within these communities, knowledge is shared and developed, and ideas are negotiated and agreed within authentic tasks to which all of the members of that community can relate:

> The activities of a domain are framed by its culture. Their meaning and purpose are socially constructed through negotiations amongst present and past members. Activities thus cohere in a way that is, in theory, if not always in practice, accessible to members who move within the social framework. These coherent, meaningful, and purposeful activities are authentic, according to the definition of the term we use here. Authentic activities then, are most simply defined as the ordinary practices of the culture. (Brown et al., 1989, p. 34)

From a games teaching and learning perspective, this means that the learning activities presented to pupils should reflect the game: authentic activities that pupils can relate to physically, socially and culturally. Too often, teachers present tasks to pupils that are unrecognisable in relation to the activity and isolated from social or cultural context. This denies the pupils opportunities to engage in a way that truly reflects the game (or their own personal understanding and perception of what the game is). Light (2008) describes 'complexity theory' to demonstrate the commonalities between different forms of constructivism. He explains that teachers should understand learning as a more complex process, one that is shaped by the learners' individual and social experiences.

Light and Fawns (2003) emphasise the need to adopt an embodied approach to understand the complexity and interdependence of cognition, perception and movement skill execution during TIG learning. In this way, they suggest that the acquisition of declarative or procedural knowledge can only be achieved by taking part in a game context. Consequently, the separation of knowledge and movement, without the influence of specific learning contexts, is unrealistic in explaining how learning occurs in games approaches such as TGfU and the Tactical approach. Additionally, lack of engagement in authentic activities means pupils will not

develop the 'clusters of capabilities', such as perceptual, strategic and technical capabilities required to be successful during games play (Kirk & MacPhail, 2002). Teaching approaches such as TGfU and the Tactical approach aim to facilitate the development of such capabilities by enabling pupils to work within small teams or groups (communities of practice). They collectively and publicly share ideas and solve the 'authentic' game problem that has been presented to them by the teacher and, through a 'debate of ideas', begin to develop a language about games (Kirk & MacPhail, 2002; Wright & Forrest, 2007). They enter into such learning activities as 'new-comers' (or legitimate peripheral participants) and through this social and interactive experience within their community of practice, move towards full participants located within a particular culture.

Both constructivism and situated learning theory have been used to explain the processes that underpin game-based teaching approaches, and both highlight the need to investigate learning as context dependent, where the interactive components within the learning situation all play an important role (Chow et al., 2007). However, although they provide a useful explanation of how game knowledge is acquired, they do not provide adequate information in terms of how functional movements actually emerge during games play.

2.9: Dynamical Systems Theory

Chow et al. (2007) refer to constraints theory and non-linear pedagogy to explain how game-based approaches like TGfU impact on the development of functional movements during games play. Constraints theory is based on dynamical systems

theory (Bernstein, 1967) and ecological psychology (Gibson, 1979) which emphasise the need to understand motor control as a system with many interacting component parts. Movement emerges as a result of constraints that need to be satisfied (Davids et al., 2008). Like constructivism and situated learning, this theory supports the notion that human intentions are 'embodied' and constrained by a number of factors including mind, body, social and biological contexts (Davids et al., 2007). Consequently, this theory rejects the notion that players simply select movements that have been coded and stored to memory (Magill, 1998; Schmidt, 1988). Instead it suggests that movements emerge from the interaction of a number of constraints; constraints that lie within the task (the equipment, rules and boundaries of the game), the environment (the surface, weather, light) and the performer (both structural and functional characteristics). In terms of games teaching, the interaction of the task, performer and the environment provides the 'boundaries' for goal-directed and dynamic behaviour to emerge. The dynamic and emergent nature of movement coordination suggests that the existence of a common optimal motor pattern for performing a skill is a misleading notion. Individuals have an abundance of movement possibilities available to them. This enables them to vary the way in which they solve movement problems and demonstrates that an optimal movement pattern for one player may not be optimal for another in relation to a specific task goal (Chow et al., 2007).

Constraints theory has its roots in ecological psychology which emphasises the circular relations of perception and action in the human body (Davids et al., 2008; Gibson, 1979). This theory proposes that properties within the environment provide

opportunities for action. These opportunities for action are also known as affordances. Each performer can perceive his/her surroundings in the scale of his/her own body and action capabilities. Players perceive affordances within the environment in relation to their own bodies, action capabilities and the location of important objects and surfaces. They use exploratory action to seek and use this perceptual information to guide their goal directed behaviour.

This exploratory activity is both inherent and essential. When teachers manipulate task constraints (small-sided or modified games), set problem-solving tasks and apply questioning techniques to teach games, it encourages pupils to explore a variety of movement solutions to tactical problems rather than receiving information passively about how to reduce errors in their performance (Chow et al., 2007). Variability plays a functional role in this exploratory behaviour because it enables the learner to search for a number of task solutions (Newell & McDonald, 1991) and it helps performers to adapt to constraints of a dynamic environment like TIG. It allows players to adapt to different locations of the ball, to different environmental incidents and may also allow the player to disguise the skill to out-manoeuvre his/her opponents (Davids et al., 2008).

Modified games and small-sided games maintain key informational sources so that pupils begin to develop information-movement couplings. This is where players develop their ability to detect key informational variables that inform their movements and learn to discard the movements that are least effective. This information in the environment, therefore, constrains and supports decision-making

behaviours. From this perspective, decision-making is not a process characterised by pre-planned routines selected prior to the execution of the skill. It is viewed as emerging from the individual with environmental constraints towards specific goals. At each moment in a game, a player must select from amongst all available affordances the particular affordance that is deemed the most appropriate to reach the intended goal. Goals, therefore, can be viewed as attractor states that the system converges towards and any sudden change in the type or number of attractors result in a qualitative change in behaviour which results in the emergence of decision-making (Araujo et al., 2006). These points of transition are known as bifurcation points which provide the performer with more specific information about the environment and thus directs his/her movement towards a functional path.

Araujo et al. (2002) examined the emergence of decision-making in 1v1 situations in basketball. Despite the enormous variability and complexity of TIG, there is evidence to suggest that there are pattered interpersonal interactions (Schmidt et al., 1990). Araujo et al. (2002) described two individuals in a dribbling dyad as a single system and suggest that a 1v1 situation in basketball can result in a relatively stable interactive dynamic structure, since the defender may counter-act any movement towards the basket by the attacker. The aim of the attacker in this situation is to de-stabilise this structure in order to successfully break free from the defender and move towards the basket. Araujo et al. (2002) examined whether the distance from the median of the attacker-defender dyad would become less stable at a particular point of the attacker-defender interpersonal distance. The dyad exhibited initial symmetry, which was broken during transitions to a new state at a certain value of the

interpersonal distance between the attacker and the defender. The attacker was trying to dribble past the defender, but the defender was trying to maintain a steady state. In order to force the emergence of a new system transition, the attacker increased the variability of the dribbling actions and when the symmetry was broken, the decision to move past the defender emerged. Also, since the players' interactions exhibit symmetry, this indicates that that there is a coupling effect and an emergent process.

Araujo et al. (2002) propose that in highly dynamic environments like basketball, there is not typically one stimulus available, there is a constant ebb and flow of information available to support a player's action. They found that successful decision-making by the attacker occurred as a result of his/her exploration of constraints that guide the decision about when to attack, constraints that include the interpersonal distance between the attacker and the defender. The attacker therefore has to be sensitive to the information within this workspace so that she/he can detect when the symmetry is broken and then break free from the defender. Similarly, Hristovski et al. (2006) found that boxers were able to perceive key contextual variables that resulted in the first time appearance and disappearance (bifurcations) of a diverse range of boxing actions. The boxers is this study were able to perceive the critical distances beyond which certain skills were no longer effective (even though the target was still reachable) and at these points, decision-making behaviour emerged. The authors suggest that coaches should encourage boxers to explore and exploit these constraints during practice rather overloading their athletes with verbal instructions about what type of punch to make.

Highlighting the importance of visual information and search in TIG, Williams et al. (2006) demonstrated that expert soccer players are more able to recognise patterns of play based on structural relations or higher order predicates (tactical or strategic significance) and that this influences their decision-making during play. This further supports the idea that practice should be designed to enhance players' pattern recognition by including relevant relational information (Williams et al., 2006). Vaeyens et al. (2007) propose that visual behaviour and decision-making is dependent on the unique constraints imposed by the task. Consequently, they suggest manipulating the relative proportion of offensive players to defensive players so that learners have time to search the game environment for relational information that will inform their goal directed behaviour.

It is important to note that task constraints do not directly influence the emergence of a decision. They determine how the specific intentions of a performer and information-movement couplings interact to allow a functional movement pattern to emerge in a modified game context (Davids et al., 2007). This is important because the performer's intentions are linked to his/her game knowledge. Although constraints theory to a certain degree marginalises the role of game knowledge in the development of decision-making skills, player knowledge, cognition and intention should be viewed as key constraints in the emergence of decision-making behaviour. (Hopper & Kruisselbrink, 2002)

It appears, therefore, that game-based teaching approaches such as the Tactical approach (Griffin et al., 1997) may be beneficial in terms of developing game

knowledge and decision-making competence. By modifying games and manipulating task constraints, the teacher adopts a more 'hands-off' role, guiding pupils towards key environmental features that inform the range of appropriate action solutions to the tactical problem (Smeeton et al., 2005; Vaeyens et al., 2007). Through attempting to satisfy the constraints manipulated by the PE teacher, exploration, pattern recognition and goal directed behaviour emerges without the need to provide explicit and prescriptive instructions.

2.10: Conclusion

Teaching TIG requires a substantial amount of knowledge about all of the components that constitute an effective performance. Additionally, teachers should be aware of the theories that underpin TIG learning and the teaching approaches linked to each theory claiming to be more effective than the traditional skills-first approach in terms of developing players' overall performance in TIG. If successful in acquiring such knowledge and in applying such approaches, teachers may be able to enhance their pupils' performance in TIG and have a positive effect on their perception of competence, enjoyment and interest in games such as soccer, rugby and field hockey. This may in turn encourage pupils to develop a more positive attitude towards TIG and PE and continue to participate in physical activity into adulthood.

However, changes are looming within the PE curriculum in Scotland, possibly at the expense of TIG. These changes are based on the notion that pupils in Scotland cannot identify with traditional activities, including TIG. However, no empirical

Scottish-based research has been conducted to investigate pupils' or teachers' thoughts about, or experiences in, TIG within the PE curriculum. The way teachers deliver games is a particularly pertinent issue, because the learning environment she/he creates can have a significant impact on pupils learning and their TIG performance. Teaching approaches such as TGfU and the Tactical approach have been the topics of a number of investigations and they appear to be more effective in developing pupils' decision-making on and off-the-ball and game knowledge, although the findings in relation to skill learning have been rather equivocal. Additionally, less research has been carried out to examine the processes involved when these approaches are used to teach TIG and the effects these processes may have on the pupils' affective responses as well as their behavioural responses.

Consequently, this thesis aimed to develop a body of knowledge and understanding about teaching and learning TIG in three main areas. Firstly, this thesis investigated pupils' experiences and perceptions of TIG within the contexts of their PE lessons. Secondly, it examined the ways in which teachers deliver TIG and the knowledge and beliefs that underpin their teaching approaches. Finally, this thesis investigated both the outcomes (knowledge and game performance) and the processes (pupil experiences, teacher thoughts and motivational climate) involved in teaching pupils using a game-based approach compared to a traditional, skill-focused approach.

Chapter 3: Methodology and General Methods

Performing in TIG games requires the acquisition of a number of cognitive and psychomotor skills and these skills are applied within the context of a highly dynamic environment. Gréhaigne and Godbout (1995) highlight the complexity of team game performance in this definition:

> The practice of team sports [self-organisation of a group confronted to another group with antagonistic interests or in view of reaching a goal (usually a target) using a common strategy] can bring a player, expected to regain possession of, pass on, or eventually propel a ball, a) to resolve anticipation-coincidence motor problems, b) to make choices among information, among potential answers depending on the likely cost and benefits, and c) to manage varying courses and trajectories of the players or the ball in conditions of decisional urgency. (p. 492 - p. 493)

Teaching and learning TIG, therefore, is a very complex process that takes high levels of motivation, effort and engagement. However, learning TIG is often viewed as a linear process where learners simply internalise pre-existing external bodies of knowledge, particularly knowledge about how to perform specific skills. This view of learning ignores the wealth of knowledge and experiences the learner brings to the environment. Moreover, it fails to recognise the way in which the learning environment can influence what and how the learner develops his/her game performance. Learning is inseparable from the learner, his/her life experiences and the learning environment. It is an interpretative process in which the experiences and knowledge the learner brings with him/her influences the way he/she interprets and makes sense of the learning episode to construct his/her own understanding. Learning involves being in (and experiencing) the social world and not just knowing about it (Light & Dixon, 2007). From this perspective, learning TIG can be explained

by more complex theories of learning, for example, constructivism (Oslin & Mitchell, 2006) and dynamical systems (Chow et al., 2006), both of which demonstrate the dynamic interactions of the learner within the environment in the construction or emergence of effective, intentional and functional movements. Constructivist approaches to TIG teaching highlights the social and cognitive dimensions of games. They recognise that learning is a complex, multidimensional process that is socially and culturally situated (Light, 2002). They appreciate that the development of understanding is fundamental to games play and that this understanding and games learning is enhanced through experience (Gréhaigne & Godbout, 1998; Kirk & Macdonald, 1998). Dynamical systems theory emphasises the need to understand motor control as a system with many interacting component parts and movement emerges as a result of constraints that need to be satisfied (Davids et al., 2008). Like constructivism and situated learning, this theory supports the notion that human intentions are 'embodied' and constrained by a number of factors including mind, body, social and biological contexts (Davids et al., 2007). Consequently, this theory rejects the notion that players simply select movements that have been coded and stored to memory (Magill, 1998; Schmidt, 1988). Instead it suggests that movements emerge from the interaction of a number of constraints; constraints that lie within the task (the equipment, rules and boundaries of the game), the environment (the surface, weather, light) and the performer (both structural and functional characteristics).

It is important, therefore that the research methods used to investigate teaching and learning in TIG are able to manage such complexity. Consequently, this thesis

applied both mixed and multiple research methods. Multiple methods were used across a series of studies in order to confirm relationships between components of the teaching and learning process (Yin, 2006). Mixed methods were applied within each study in order to produce convergent evidence and thus a deeper understanding of the issues under investigation (Yin, 2006). Mixed methods design is an approach to conducting research that involves the mixture of qualitative and quantitative approaches in many phases in the research process. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone (Creswell, 2003; Creswell & Plano-Clark, 2006).

Qualitative research produces findings that have not been derived by statistical procedures or other means of quantification (Strauss & Corbin, 1990). Qualitative researchers aim to acquire an in-depth understanding of human behaviour and the factors that govern human behaviour. Researchers attempt to uncover the reasons for various aspects of behaviour, investigating the why and how of decision-making, not just what, where, and when. For example, Dagkas and Stathi (2007) aimed to explore the social and environmental factors that affected young peoples' participation in physical activity. They conducted this investigation based on the premise that participation in physical activity is context dependant, framed within the discourses of class, social-economic status and gender. Consequently, they encouraged the children in their study to generate the data in their own words in order to understand why they engaged or did not engage in physical activity. They did this by uncovering the children's perspectives, orientation and participation in school, and across a

range of social, cultural and geographical locations. Green (2000) investigated the everyday philosophies of PE teachers. He based this research on the premise that knowledge is inherently social and needs to be viewed as such. In order to understand teachers' philosophies, therefore, Green (2000) believes that it is necessary to:

> make overt the ideological underpinnings of PE teachers' 'philosophies', prior to making sense of the ways in which teachers' 'knowledge' may be seen as an aspect of the figurations of which they are part. (p. 111).

Smith and Parr (2007) explored the ways in which young people viewed PE. They adopted a sociological perspective in the belief that a deeper understanding of this topic is necessary to appreciate more clearly the way the subject is experienced in reality by pupils in schools.

Qualitative research is usually more focussed and sample sizes are smaller to enable researchers to explore the richness, depth and complexity of phenomena. It assumes that people create and associate their own subjective meanings as they interact with the world around them. Consequently, qualitative research attempts to understand phenomena through accessing the meanings people assign to them (Creswell, 2003). Part of the aim of this thesis was to examine both pupils' and teachers' thoughts and beliefs about their TIG experiences within the context of their PE curricula. In order to do this, qualitative methods including focus group interviews and semi-structured interviews were used. For example focus group interviews were carried out in chapter 4 in order to encourage the pupils to discuss their experiences in PE and of TIG. In chapters 6 and 7, the aim of the focus group interviews was to encourage the

pupils to discuss their experiences of learning to play basketball and their knowledge about the game of basketball. Focus groups were used in this investigation because they were particularly useful for exploring young people's knowledge and experiences, helping the pupils to recall events more clearly, resulting in a more accurate and richer discussion (Kitzinger, 1995). The one-on-one semi-structured interviews in chapter 5 provided a safe, anonymously reported environment for the teachers to express their thoughts and beliefs. Additionally, the questions provided key issues for the teachers to discuss, but were carefully designed so that they elicited the teachers' opinions on each area, as opposed to leading the teacher toward preconceived choices. This more flexible approach allowed themes to emerge whilst ensuring that the intended data were collected (Robson, 1993).

There is generally a distinction drawn between qualitative and quantitative investigation. However, many argue that the two can go hand in hand. Qualitative research is, in some cases, instrumental to developing an understanding of phenomena as a basis for quantitative research. Similarly, quantitative research may inform, or draw upon, the process of qualitative research (Rowlands, 2005). In contrast to qualitative research, quantitative research is based on scientific ideas that aim to identify objective and unbiased answers to research questions. It asserts that there is an objective reality and that this can be quantified with knowable degrees of certainty using objectively-correct scientific methods (Jean Lee, 1992; Long et al., 2000; Neuman, 2003). Quantitative research does not explore and interpret personal attributes such as thoughts or beliefs, it investigates measurable phenomena that can be expressed as numbers or figures (Caulley, 1994). However, concepts such as

beliefs or learning orientations can be operationalised and applied to questionnaires and assigned values. For example, Wang and Liu (2007) used questionnaires to quantify pupils' beliefs about sport and used this to predict their goal orientations. One of the questionnaires asked the pupils to make a judgement about their conception of ability based on a series of statements, for example, 'to be successful in sport I have to learn skills and techniques'. They had to assign a value next to this statement based on whether they agreed (1) or disagreed (5). This type of questionnaire can then be used to compare similarities and differences of each concept between individuals or groups. In a different type of quantitative investigation, McPherson (1999) aimed to quantify tennis players' knowledge by coding their responses based on the number of concepts they used in describing their own performance. They used the figures they obtained from this experiment to distinguish between the knowledge of expert tennis players compared to novice tennis players. In an earlier study into the changing knowledge of tennis players, McPherson and French (1991) administered a questionnaire at the beginning, middle and end of a semester of tennis instruction. Differences in the marks awarded for the responses to each question from the start to the end of the semester allowed the researchers to quantify how much knowledge the learners had gained as a result of the instruction. Part of the present thesis aimed to quantify the teaching behaviours adopted when teaching TIG, as well as, pupil performance during 4v4 games of basketball. Quantitative data were gathered because it was important to obtain measurements that could indicate precise differences between teachers, and in the game performances, from pre to post intervention. For example, to assess the participants' game performance in chapter 6, a modified coding procedure initially

developed by Blomqvist et al. (2005) was employed. This is a coding procedure that was developed to evaluate students' game performance (decision-making and skill execution) in soccer. This objective measure was used to detect changes in the pupils' game performance both on and off-the-ball from pre to post intervention. All of the statistical tests in this thesis were carried out using the software program SPSS 11.0.4 for Mac OS X. In chapter 7, teacher behaviours were objectively measured using the TARGET (Ames, 1992) configuration modification of the Behavioural Evaluation Strategies and Taxonomies (BEST) (Sharpe & Koperwas, 1999) software developed by Morgan et al. (2005b). This enabled the researcher to record specific behaviours and then use the resultant data to make comparisons between teachers in relation to the motivational climate created by each teacher.

The present investigation, therefore, was conducted from both a qualitative and a quantitative perspective. This provided multiple sources of information that could be integrated to develop an in-depth understanding of both the processes involved in teaching and learning TIG as well as the outcomes of different teaching approaches. Additionally, a case study design was adopted in order to develop an in-depth understanding of the pupils in one urban state school and its three feeder primary schools. It provided examples of teachers in authentic situations and, as a result, a clearer and deeper understanding of the contexts in which their beliefs and practices were formed (Cohen, et al., 2000). This meant that the unique features of the case could be described, but it could also highlight a critical or telling issue of something about which may already be known, the result of which may throw light on a relatively familiar situation or context. Also, since case studies are particularly suited

to practitioner-orientated research, the teachers and the researcher involved in this thesis were given the opportunity to use their knowledge and experience to make considered analyses of each phenomena and provide rich descriptions of their experiences and the experiences of their pupils (Cohen, et al., 2000). In terms of data analysis, the qualitative posture of 'indwelling' was adopted in order to investigate the pupils' and teachers' responses in a reflective and empathetic manner (Maykut & Morehouse, 1994). The researcher involved in this process had previous experience teaching PE and used this experience, knowledge and background to analyse these data in a responsive, adaptive and holistic way (Maykut & Morehouse, 1994).

The case study under investigation was a Scottish urban state secondary school and its three urban state feeder primary schools. These schools were selected because 96% of pupils in Scotland attend state schools and the greatest proportion of pupils in Scotland attends schools in 'large urban areas' such as Edinburgh (36%). Smaller proportions of pupils attend schools in 'other urban areas' (32%), 'accessible urban areas' (12%), 'small rural towns' (4%), 'accessible rural areas' (11%) and 'remote rural areas' (5%) (Scottish Executive, 2007). Moreover, the pupils in each school were representative of all socio-economic levels and ethnicity (Scottish Executive, 2007). Additionally, the PE content covered in these schools followed the 5 – 14 Expressive Arts Guidelines and the Standard Grade curricula for Scottish primary and secondary schools (SOED, 1992; SEB, 1988). The activities that were taught in the schools comprised dance, gymnastics and games, including the TIG soccer, rugby, hockey and basketball in all four schools with the addition of netball and lacrosse in the primary schools. It is also important to note that rugby, hockey and

soccer were taught in single sex classes in the secondary school, which reflects a more 'traditional' way of organising PE lessons in Scottish schools (Lines & Stidder, 2003). Consequently, although this series of investigations raises important issues with regards to the schools in this urban area, conclusions may be drawn that have a wider applicability (Finn, et al., 2000).

3.1: Consenting Participation

Permission to survey, interview and video the pupils was obtained from the Head Teacher and all of the pupils provided informed parent/guardian consent and informed assent to take part in the series of studies that formed this thesis (Appendix 1). Informed consent to take part in the studies was also obtained from all of the teachers. All of the participants were told that their involvement was voluntary, that they were free to withdraw at any time and were assured that their responses would remain confidential. For the purpose of teacher confidentiality, the names used in this thesis are pseudonyms. All the protocols were approved by the Ethics Committee of The University of Edinburgh, Scotland.

Chapter 4: Pupils' Perceptions of and Experiences in Team Invasion Games

4.1: Introduction

Recent government publications (Scottish Executive, 2003, 2004a) have recommended reviewing the content that is being delivered within the Scottish Physical Education (PE) curriculum. The PE Review Group (Scottish Executive, 2004a) claims that young people in Scotland are opting out of PE and physical activity partly because they do not find the activities taught in the more 'traditional' PE curriculum particularly meaningful. This is a PE curriculum that is dominated by the presence of team invasion games (TIG) such as soccer and field hockey. However, although meaningful content is an important construct within teaching and learning (Chen, 1996; Deci & Ryan, 2000), previous research suggests that one of the main reasons children and young people opt out of physical activity is because of their low levels of competence (both perceived and actual) in those activities (Corbin, 1999; Welk, 1999). Additionally, although the recommendations made by the PE Review Group are based, to some extent, on previous HMIE reports (1995, 2001), they do not seem to be derived from any empirical research that has investigated motives for participating in physical activity, for example, perception of competence and sources of enjoyment. Certainly there is no evidence to suggest that any Scottish-based research has been carried out in these areas to support the recommendations made by the PE Review Group. Changes to the Scottish PE Curriculum are looming, possibly at the expense of TIG, which have the potential to contribute significantly to the physical education of Scottish pupils, yet the reasons for the proposed changes appear to be, in part, anecdotal in nature and may even be

without foundation. One means of addressing this would be to research pupils' perceptions of, and experiences within, the 'traditional' Scottish PE curriculum, particularly in relation to TIG such as soccer, basketball and rugby. Pupils are at the heart of what we do in PE. They are not passive agents ready to receive new knowledge and skills. They are active and fundamental components of the teaching and learning process. They bring with them a set of beliefs, values and experiences all of which contribute to how they perceive PE and ultimately, what they learn. Consequently, teachers and policy makers must be aware of the ways in which pupils perceive their PE experiences in order to create appropriate and meaningful curricula and learning environments. Moreover, very little systematic inquiry has been carried out to find out the different ways in which pupils experience PE, perhaps as a result of the belief that children are not capable of articulating their perceptions. However, children are capable of verbalising their thoughts about PE and research that has asked children to do this found that:

> young people are observant, are often capable of analytic and constructive comment, and usually respond well to the responsibility seriously entrusted to them, of helping to identify aspects of schooling that get in the way of their learning. (Rudduck et al., 1996, p. 8)

It is important to involve pupils in the process of curriculum innovation to ensure that any modifications made to the PE curriculum in Scotland are appropriate and meaningful. Therefore, the purpose of this study was to investigate pupils' perceptions of, and experiences in, TIG within the PE curriculum in Scotland.

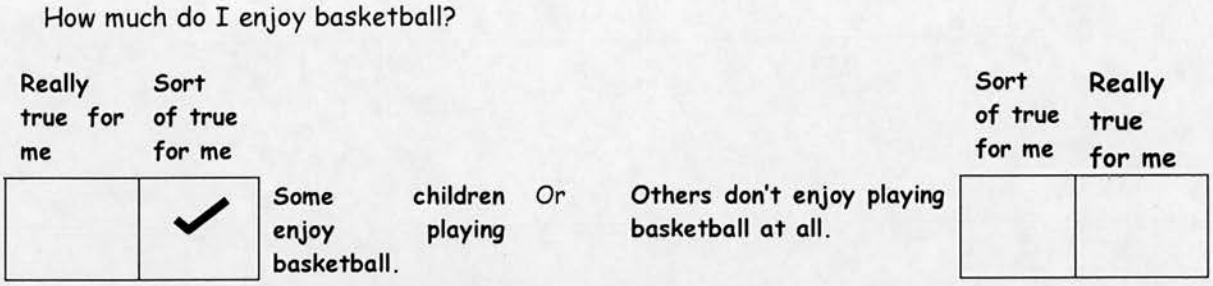
4.2: Methods

Data from three different year groups (age range 11 to 15 yrs) were gathered for the pilot study and the main study; primary 7 (P7), secondary 2 (S2) and secondary 4 (S4). These groups were chosen because it was of particular interest to examine the experiences and perspectives of pupils who were in the age groups where participation levels begin to fall significantly in sport, exercise and active play (Scottish Executive Health Department, 2003). A mixed methods design was used to gather both quantitative and qualitative data from the pupils in each year group, thus providing a better understanding of the issues under investigation (Creswell & Plano-Clark, 2006). Pupils from each year group completed a modified questionnaire (Appendix 2) (Fox & Corbin, 1989; McAuley et al., 1989; Molt et al., 2001) and a sample of pupils from each year group took part in a focus group interview to discuss their experiences in, and perceptions of, TIG within their PE lessons (Appendix 3). The questionnaires were administered and the focus groups took place at a time in the term when all of the pupils had taken part in TIG as part of their PE curriculum. The secondary pupils completed the questionnaire and took part in the focus group interviews in a classroom at the start of their timetabled PE lesson. The primary school pupils completed the questionnaire in their classroom at a time that was convenient for their class teacher. The primary school pupils that took part in the focus group interviews were taken to a smaller classroom free from any distractions. Both the questionnaire and the focus group interviews were linked to the pupils' most recent experience of TIG within PE and were structured around three key themes; perception of competence (Fox & Corbin, 1989; Whitehead, 1995); enjoyment (Molt et al., 2001), and personal value/importance (McAuley et al., 1989).

4.2.1: The Team Invasion Games Questionnaire

Perception of competence in TIG was assessed using statements adapted from the Children and Youth Physical Self Perception Profile (CY-PSPP) (Fox & Corbin, 1989; Whitehead, 1995). This is a measure that was designed to assess individuals' perception of competence in four domains; physical conditioning, sport competence, attractive body and physical strength. For the purpose of this study, only the items linked to perception of sport competence were selected. Enjoyment was assessed using statements adapted from the Physical Activity Enjoyment Scale (PACES) (Kendzierski & DeCarlo, 1991). Molt et al. (2001) adapted this scale for adolescents and found that it was a valid and reliable measure for physical activity enjoyment. There was also an additional statement included to measure the pupils' overall enjoyment of all the TIG within their PE curriculum. The statements used to measure the pupils' enjoyment of their most recent TIG in PE consisted of items relating to 'enjoyment' of TIG and 'factors influencing enjoyment' of TIG (Molt et al., 2001). Finally, the statements used to measure value/importance were derived from the Value/Usefulness subscale of the Intrinsic Motivation Inventory (IMI) (McAuley et al., 1989). These included statements about the general importance and value of learning to play TIG and the pupils' willingness to continue to play TIG.

Each subscale was organised using a structured alternative format (Harter, 1982). An example of this format can be seen below. This derived from Harter's (1982) recognition that this format facilitates children to give accurate perceptions rather than socially desirable responses. The average of the scores for each variable was calculated to form a uni-dimensional score for perception of competence, enjoyment and value.



4.2.2: Focus Group Interviews

The aim of the focus group interviews was to investigate pupils' perceptions of, and experiences in, TIG within the context of their PE lessons. The processes involved in focus group interviews encourage pupils to explore and clarify their views in ways that would be less easily accessible in a one to one interview. They also help the pupils recall events more clearly, resulting in a more accurate and richer discussion (Kitzinger, 1995). The initial questions for the focus group interviews were constructed by the lead researcher and then presented to the second researcher for discussion. Both researchers were experienced PE teachers and games players and had previously conducted interviews with primary and secondary pupils. The researchers agreed that the questions were appropriate in terms of the their relatedness to the key themes and each of the age groups within this study. Furthermore, this discussion resulted in the addition of general introductory questions to make the pupils feel comfortable in the focus group environment and in the development of probes that could be used where necessary and appropriate to seek elaboration and/or clarification on key issues raised by the pupils (Finn et al., 2000; Podlog & Eklund, 2006).

4.2.3: Pilot Study

The purpose of the pilot study was twofold. Firstly, it aimed to ensure that the pupils understood each of the statements in the questionnaire. Secondly, it was conducted to ensure that the pupils from all three age groups understood the questions posed by the researcher during the focus group interviews and could discuss their views and perceptions about their TIG experiences within PE.

4.2.3.1: Participants.

Sixty-three pupils (32 female; 31 male) took part in the pilot study. The P7 pupils (n=23; 12 female and 11 male; age = 11 $\pm$ 0.8 yrs) came from an urban state primary in the Borders of Scotland and both the S2 (n=18; 9 female and 9 male; age = 13.5 $\pm$ 0.5 yrs) and S4 (n=22; 11 female and 11 male; age = 15 $\pm$ 0.4 yrs) pupils came from a secondary school in Stirling.

4.2.3.2: Team Invasion Games Questionnaire.

The Team Invasion Games Questionnaire was piloted on three separate occasions with a group of P7 (n = 15, 8 female and 7 male; age = 10.5 $\pm$ 0.5yrs), S2 (n = 12, 6 female and 6 male; age = 13.4 $\pm$0.5yrs) and S4 pupils (n = 16, 8 female and 8 male; age=14.6 $\pm$ 0.5yrs). All of the pupils were encouraged to raise their hand if there were any words, or any statements they did not understand. As a result of this process, the word 'seldom' was replaced with the word 'never' and the word 'pleasurable' was replaced with the word 'fun'. Both of these changes were to statements linked to how much they enjoy playing basketball during PE and were

made because two P7 pupils did not know what these words meant. None of the pupils from any of the year groups questioned the meaning of the statements.

4.2.3.3: Focus group interviews.

The focus group interviews were piloted with a group of P7 pupils (4 males and 4 females; age=11.6 ± 0.5yrs), S2 pupils (3 males and 3 females; age = 13.6 ±0.5yrs), and S4 pupils (3 males and 3 females; age = 15.1 ± 0.4yrs). The issues that emerged were clearly linked to the research topic, highlighting the value of focus groups in assisting children to recall events more clearly, resulting in a more accurate and richer discussion (Kreuger, 1994; McCarthy & Jones, 2005).

4.2.4: Main Study

4.2.4.1: Participants.

Two hundred and eighty five pupils (163 female; 122 male) participated in this study. The S2 pupils (n=77; 43 female and 34 male; age = 13.0 ±0.0yrs) and the S4 pupils (n=76; 47 female and 29 male; age = 15.0 ±0.3yrs) came from one urban state secondary school in Edinburgh. It was the intention of this study to ask all of the S2 and S4 pupils to complete the questionnaire. However, due to resource and timetable constraints, the principal teacher of PE was only able to select a sample of pupils from each year group. In doing so, he selected a stratified random sample (Cohen et al., 2000) that represented S2 and S4 pupils in relation to gender, ability and experience in physical activities and PE. The final samples represented 46% of the S2 pupils in the school and 52% of the S4 pupils in the school. The P7 pupils (n=131; 72 females and 59 males; age = 11.0 ±0.3yrs) came from the secondary

school's three feeder primary state schools and each of the P7 pupils from all three schools completed the questionnaire.

4.2.4.2: Team Invasion Games Questionnaire.

All of the pupils completed the Team Invasion Games Questionnaire (n=285). The purpose of the questionnaire was explained to the pupils and they were given five minutes to read the questionnaire instructions. They were reminded that the information they disclosed would be confidential and anonymous, and they were encouraged to be as honest as possible. All pupils were given as much time as they needed to complete the questionnaire and were supported by the lead researcher and the class teacher whenever they required assistance. It took between 10 and 20 minutes to complete the questionnaires.

4.2.4.3: Psychometric properties of the Team Invasion Games Questionnaire (TIGQ).

Confirmatory factor analyses were carried out using the maximum likelihood estimation procedure to examine the factor structure of the TIGQ using EQS 6.1 for Windows. Three one factor, congeneric measurement models were tested (perceived competence, enjoyment, and value/importance), followed by a three factor first order factor measurement model. The fit indices for each of the congeneric models were satisfactory: χ^2 = 16.11, df = 11, p = .13, NNFI = .987, CFI = .993, GFI = .983, SRMR = .030, and RMSEA = .041, 90% CI of RMSEA = .000 to .081 for perceived competence, χ^2 = 30.52, df = 14, p = .006, NNFI = .969, CFI = .980, GFI = .968, SRMR = .033, and RMSEA = .065, 90% CI of RMSEA = .033 to .097 for

enjoyment, and χ^2 = 5.88, *df* = 5, *p* = .32, NNFI = .996, CFI = .998, GFI = .992, SRMR = .021, and RMSEA = .025, 90% CI of RMSEA = .000 to .091 for value/importance. The results of the CFA also supported the three-factor structure of the TIGQ; χ^2 = 237.64, *df* = 146 *p* < .053, NNFI = .945, CFI = .953, GFI = .954, SRMR = .058, and RMSEA = .049, 90% CI of RMSEA = .037 to .059. Cronbach's alphas for perceived competence, enjoyment, and value/importance were .84, .87, and .81 respectively.

4.2.4.4: Focus group interviews

In total, five separate focus group interviews were conducted; three with the P7 pupils, one from each of the three feeder primary schools (n=22; 11 female and 11 male; age = 11.6 ± 0.4 yrs), one with the S2 pupils (n=8; 4 female and 4 male; age = 13.7 ± 0.4 yrs) and one with the S4 pupils (n= 10; 4 female and 6 male; age = 15.5 ± 0.5 yrs). The groups were selected by the class teachers to represent the class range in terms of their PE ability and extra curricular activity/interests and, based on Krueger's (1994) guidelines for conducting focus group interviews, the groups consisted of between 6 and 10 participants. All of the interviews took place in a classroom free from distraction and the duration of each focus group interview varied between 30 and 40 minutes. The classrooms were set up so that the pupils sat in a semi-circle and desks were removed in order to create a less formal environment. The pupils were then asked to answer and discuss a series of questions about their likes and dislikes in PE and TIG, how good they thought they were at TIG and whether or not they thought that TIG were important to them personally, as well as an important part of their education. Probes were used where necessary in order to

seek elaboration and/or clarification on key issues raised by the pupils (Finn et al., 2000) and to ensure that all of the pupils contributed to the discussion. Additionally, at the end of each question, the researcher summarised the pupils' comments to check for understanding and accuracy and asked for any additional comments. This part of the process allowed the researcher to take notes that highlighted the key issues raised. All interviews were recorded using an audiocassette recorder and transcribed verbatim.

4.3: Statistical Analysis

To compare the three year groups (P7, S2 and S4) and gender groupings for average enjoyment, perception of competence and value/importance a Kruskal-Wallis ANOVA was used. A post hoc Mann Whitney U test0 was then undertaken, with Bonferroni correction factor to compare individual groups. Simple and partial correlation analyses were conducted to examine the relationships between enjoyment, ability and value/importance and overall enjoyment in TIG.

4.4: Results

4.4.1: Team Invasion Games Questionnaire

4.4.1.1: Year group.

Kruskal-Wallis ANOVA compared the three year groups for enjoyment of, perceived competence in and the value/importance of TIG. There was no effect across year groups for enjoyment, chi-square (2) = 3.28; p = 0.09, or ability, chi-square (2) = 3.22; p = 0.09. However, there was a significant effect across year groups for the value/importance aspect, chi-square (2) = 5.61; p = 0.03. A post hoc Mann-Whitney

U test was applied, with a Bonferroni correction factor to compare individual year groups. There was a significant difference between P7 and S4 pupils' for the value/importance of TIG (Z = 2.36; p = 0.009), indicating that the P7 pupils value the role of TIG within their PE curriculum more highly than the S4 pupils.

4.4.1.2: Value/Importance.

Zero-order correlation analysis was used to examine the relationships between enjoyment and perceived competence with the value/importance all the pupils (n = 285) placed on the specific TIG they were taught during their PE class. Enjoyment was highly correlated with importance/value scores ($r = 0.71$, $p < 0.01$), suggesting that 50 % of the pupils' value/importance scores could be accounted for by their enjoyment scores. Perceived competence was also strongly associated with pupils' value/importance scores ($r = 0.62$, $p < 0.01$), indicating that 38% of their value/importance scores could be accounted for by their average perceived competence scores. When controlling for ability, the partial correlation between average enjoyment and average perceived competence scores was .45 ($p < .001$). When controlling for enjoyment, the partial correlation between perceived competence and value was .11 ($p = .07$). Therefore, enjoyment plays a major role in predicting value/importance scores compared to the average perceived competence scores.

4.4.1.3: Overall enjoyment of TIG in PE.

The correlation between the participants' overall enjoyment of all TIG lessons in PE and average enjoyment, perception of competence, and value/importance of invasion

games were .59, .57, and .47, respectively (all *ps* < .05). This shows that the participants' overall enjoyment of TIG within their PE curriculum is related to their average perceived competence, average enjoyment and average value/importance scores.

4.4.1.4: Gender.

A Kruskal-Wallis ANOVA compared gender for all three variables and found a significant main effect for gender for enjoyment ($F(1, 271) = 10.76$; $p < 0.001$), ability ($F(1, 271) = 18.93$; $p < 0.001$) and value/importance ($F(1, 269) = 15.43$; $p < 0.001$) of TIG. Thus, male pupils seem to enjoy TIG more than female pupils, have higher levels of perceived competence than female pupils and place greater value/importance on TIG during curricular PE (age range 11 – 15 years).

4.4.2: Focus Group Interviews

In the first stage of analysis, the transcripts were read and re-read and the key statements made by the pupils were highlighted. The field notes that were taken during the interviews supported this process. A second researcher reviewed the statements that were highlighted, thus ensuring investigator triangulation. This generated a discussion that provided a valuable opportunity for critical reflection of the pupils' responses as well as an opportunity for both researchers to agree on the most salient features of each script within the context of this investigation. Following this meeting, each script was reanalysed according to the questions asked (Appendix 3) in order to provide a more focused framework for analysis (Taylor-Powell & Renner, 2003). This involved categorising the key statements using the constant

comparison method of analysis (Glaser, 1964; Podlog & Eklund, 2006). The results of this analysis can be seen in Appendix 4. Further investigator triangulation was addressed when the lead researcher deductively attached the categories to the 'uncategorised' statements and the second researcher deductively attached categories to a sample of 'uncategorised' statements. As a result of this process, no changes were made to the S2 and the S4 responses and fourteen P7 themes were grouped within a different category.

General Likes and Dislikes in PE and Team Invasion Games

Primary 7

The two dominant reasons given by the P7 pupils for liking an activity in PE were that they found the activity fun and that they liked performing skills, especially those skills that they thought they were good at. At the same time, not finding something to be fun or not enjoying doing the skills of an activity (because they are not good at them, don't feel like they have improved, or because they are too difficult) were frequently given as reasons for disliking an activity within PE. Being good at performing skills was a commonly cited reason for liking TIG and not being good at performing skills was a prevailing feature of the pupils' discussion about the things they did not like about TIG, for example:

> cause I'm not good at it. Like with my feet, I'm not that good at kicking the ball. (Primary School C; Pupil 4; Female).

Further, playing with friends, making friends working with others and feeling part of a team were very important to these P7 pupils and were key reasons for liking TIG within their PE lessons.

Secondary 2

The two key issues raised in terms of liking PE were being good at an activity and having prior experience in an activity. When discussing the things they liked about TIG, this group talked about being in a team, with a particular emphasis on friendship. They also discussed how they liked to play in small-sided games because it gave them more opportunities for involvement. It was also worth noting that the pupils seemed to understand and value the concept of small-sided games since they discussed, in some depth, their enjoyment with relation to being more involved, receiving more passes and in general, playing a 'better' game. The S2 pupils did not like the things that they did not feel competent in. Additionally, when they played with classmates that were better than them, or with classmates that took playing the game too seriously (two characteristics that seem to be synonymous with one another), they were less likely to enjoy this experience because they felt less involved in the game, a feeling highlighted in the following statement:

> because if you're with like one of these amazing people then you hardly ever get passed the ball 'cause they'll just dribble it down the field themselves. (Secondary 2: Pupil 3; Male).

Secondary 4

In general, the S4 pupils talked very positively about their PE experiences. They discussed specific pupils in their class, when their PE class was during the day, the

class atmosphere and the content that was delivered. When they discussed the things that they did not like about PE, they mentioned types of activities offered to them within the curriculum. They felt that the teachers had a bias towards particular activities, which resulted in doing more of one activity compared to another. One pupil believed that the teachers chose the activities without due consideration of what the pupils might want to do:

> And usually the teachers themselves, they like football, and they think that almost that because they like it that other people should do it instead of asking people what they want to do. (Secondary 4: Pupil 4; Male).

In terms of the reasons for liking TIG, the S4 pupils discussed the role of the other pupils in their class. They described how they enjoyed classes where the pupils were of similar abilities, which enabled everyone to be involved. In terms of not liking TIG, a discussion took place about how other classmates took playing too seriously and that this made their experience less fun. One of the female pupils in the group believed that the boys in her class did not want to play soccer with the girls because they thought that they were not good enough. This had a negative effect on the way in which she perceived this game.

Team Invasion Games: What Am I Good At/Not Good At/How do I know?

Primary 7

Performing skills and evaluating the outcome of their performance were the most commonly cited ways in which they determined their ability. The P7 pupils also linked their perception of competence to their improvements in performance. Another important source of their competence beliefs derived from significant others

within their learning and playing environments, for example when they were praised or clapped by friends or teachers. When they discussed TIG with relation to their low perceptions of competence, they described how they measured their ability by comparing their performance to others in the class, as can be seen in this instance:

> because once I played hockey and there was some people that I was playing with that I thought were a lot better than me so that put me off. (Primary School C; Pupil 3; Male).

Secondary 2

The S2 pupils linked their positive perceptions of competence to the successful execution of game skills. When discussing low perception of competence and TIG, the pupils linked their lack of ability to unsuccessful performance outcomes and negative responses by classmates. One pupil stated:

> I didn't understand what we were supposed to do, everyone was like "way, well done" (sarcastically). Then like they take it well too far and they like start shouting abuse at you. (Secondary 2: Pupil 8; Female).

Secondary 4

The S4 pupils also based their perception of their competence on the outcome of performing a skill, or because of the praise that they receive from the teacher or their peers. In terms of low perceptions of competence, the pupils' discussed unsuccessful attempts at performing skills and one pupil highlighted the impact that the negative attitude of others had on his perception of competence:

> they just take the absolute mick out of you, do you know what I mean' (Secondary 4: Pupil 4; Male).

Another pupil described how the behaviour of the teacher influenced his perception of competence. He described how the teacher picked the more able performers for demonstrations and, in doing so, sent an explicit message to the others about their performance capabilities.

Team Invasion Games - How do I feel/behave when I know I'm good/not good?

Primary 7

The P7 pupils experienced positive feelings of happiness and excitement when they perceived their competence to be high. Another important topic that emerged from this discussion was that their feelings of success had a very positive impact on their motivation to apply more effort to participating and to continue participating, reflected in the following statement:

> and then the next time you try harder to get more in. (Primary School B; Pupil 7; Female).

In contrast, when they described their feelings/behaviours in relation to low perception of competence, they mentioned how they reduced the amount of effort they applied to the game and sometimes they did not want to play at all:

> It makes me not want to play it so I don't try my hardest. (Primary School C; Pupil 3; Male).

Interestingly, for five of the P7 pupils, not being very good at a game, or not experiencing success in a game, made them want to work even harder to achieve success.

Secondary 2

The S2 pupils discussed how being good at something made them want to apply more effort. They had more to say about the negative aspects of their games experiences compared to their positive experiences. A large part of the discussion about feelings or behaviours linked to low levels of perceived competence revolved around the notion of decreased effort. When these pupils perceived their competence level to be poor, this often made them not want to continue to participate:

> and then sometimes it makes you like really like you just want to like stand around and not do anything and stuff. (Secondary 2: Pupil 2; Male).

Secondary 4

Very little was discussed with relation to how being good at something made them feel or behave. One pupil made a statement that described a positive feeling:

> If you score a lot then you feel better. (Secondary 4: Pupil 2; Male).

Another pupil made a statement that suggested that it makes him apply more effort:

> you want to score more so it sort of drives you on. (Secondary 4: Pupil 2; Male).

More discussion took place when they were asked to describe how they felt or behaved when they perceived their competence to be low in a TIG. Feelings of annoyance, depression and pressure were cited as a consequence of low perceptions of competence. The main focus of this discussion however, was how feelings of incompetence made the pupils not want to apply any effort to their

performance/learning. Comments were made within this category that mentioned the influence other performers had on their lack of effort/ involvement, such as:

> well if they're getting to do all the things just let them do it this time. (Secondary 4: Pupil 5; Female).

Are Team Invasion Games an Important Part of my Physical Education?

None of the pupils from any of the year groups said that TIG were not important. The P7 and S4 pupils discussed the importance of learning to be part of a team and the S2 pupils discussed how learning to play TIG would give them more opportunities to continue to be involved in a game or a physical activity later in life.

4.5: Discussion

It has been claimed that young children in schools in Scotland cannot relate to the activities that are currently taught within the Scottish PE curriculum (Scottish Executive, 2004a), activities that predominantly include TIG such as basketball, rugby, hockey and soccer, games that are highly important from a cultural perspective and an educational perspective. However, one of the issues with this claim is that it does not appear to derive from any empirical, Scottish-based, research. Consequently, the purpose of this study was to address this dearth of research from the pupils' perspective by investigating their perceptions of, and experiences in, the TIG that are taught within the 'traditional' PE curriculum in Scotland.

4.5.1: Team Invasion Games and Value/Importance

When the pupils in this investigation were asked to respond to questionnaire statements linked to how much they valued TIG or how important they thought they were, the P7 pupils placed significantly more importance on TIG within their PE curriculum than the S4 pupils. This finding is important because when an individual perceives something as meaningful or valuable, he/she is more likely to engage, persist and continue to participate in that activity (Chen, 1996; Deci & Ryan , 2000). Therefore, further study of this issue is required to investigate some of the reasons *why* children lose interest in TIG as they move through the Scottish curriculum from P7 to S4 (age range 11 years to 15 years). Additional study may also help to explain why the females in this investigation responded significantly more negatively to all three variables (perception of competence, enjoyment and value/importance).

4.5.2: Team Invasion Games and Perception of Competence

The findings from this study show that the female pupils had significantly lower perceptions of competence than males across the age range 11 to 15. Furthermore, there appeared to be an association between both males' and females' perception of competence and the value/importance they attached to TIG since 38% of the pupils' value/importance scores could be accounted for by their perception of competence scores. Reflecting this, Chen and Darst (2002) found that skill development played an important role in both male and female pupils' situational interest in a series of basketball tasks and that situational interest can assist in the development of high individual interests (stored knowledge and stored values), which can have a positive influence on intrinsic motivation (Deci & Ryan, 2000). Consequently, the more an

individual values an activity, or the more individual interest he/she has in an activity, the more likely he/she is to be self-determined, enjoy and achieve success in that activity (Chen & Darst, 2002). Perception of competence in TIG, therefore, may be a key motive for pupils', particularly females', lack of interest and involvement in games such as soccer, hockey and rugby. Certainly, this seemed to be the case in an earlier study carried out by Griffin (1984), who found that the majority of the female pupils participating in a co-ed middle school team sports unit were of low ability and as a result, tended to be less involved in play during games lessons.

One of the factors contributing to females' low ability levels in TIG may be that TIG play a less dominant role in their lives compared to males (Cashmore, 2005; Chepyator-Thomson & Ennis, 1999). Many males grow up playing TIG such as soccer and rugby, they are provided with more opportunities to play, better facilities and greater encouragement by parents, teachers, peers and the media (Women's Sport Foundation, 2007). Consequently, this enhanced experience for male pupils coupled with the more limited opportunities for females to access TIG, possibly widens the gap between males' and females' competence levels, and perhaps their perception of competence, as they grow older. However, negative perception of competence in TIG is not an issue that relates exclusively to females (Ennis, 1999). In the present study, male pupils discussed their lack of competence in TIG and described how this had a negative effect on their learning experiences. For example, a male S4 pupil described how he did not enjoy participating with more able boys because they did not pass the ball to him. Also, if he made a mistake, the 'more able' boys would direct abusive comments towards him:

you just say to yourself there's not much point playing if they're just going to give you abuse every time you miss it. (Secondary 4: Pupil 4; Male).

Competence and perceptions of competence seem to be key factors in both male and female enjoyment and beliefs about the value/importance of TIG for the participants in this study.

4.5.3: Team Invasion Games and Enjoyment

The findings indicate that 50% of the pupils' value/importance scores could be accounted for by their enjoyment scores. Those pupils who enjoyed their TIG lessons were more likely to value TIG and deem them an important part of their PE curriculum compared to those pupils that did not enjoy TIG lessons. The focus group interviews provided even more insight with regards to pupils' enjoyment by uncovering information about what the pupils enjoyed and, importantly, what they did not enjoy about their TIG lessons. For example, all of the year groups in this study discussed how they enjoyed being in a team and being in a team that included their friends. These findings are similar to those identified by Passer (1982) who found that affiliation (linked to team atmosphere, team spirit, friendship, to be with and to make new friends) was one of the six prime motives for children's participation in physical activity. Likewise, Wankel and Kreisel (1985) found that 'being in a team' or 'being with friends' were important factors underlying youth sports enjoyment. More recently, Sit and Lindner (2006) found 'friendship' as one of the most important motives for adolescents' participation in sport and physical activity. In the present study, the S2 and the S4 pupils provided greater clarity about the things they enjoyed about being in a team by stating that that liked to play with

peers who demonstrated similar levels of practical ability. This enabled them to be more involved in the games and they would be less likely to receive any negative comments from more able pupils if they made a mistake. Importantly, these pupils wanted to be involved in games play, and when they were given this opportunity, they had a more enjoyable experience. However, when they played with more able pupils, they were less involved and had a more negative experience. One of the female S4 pupils discussed how she did not enjoy playing TIG with boys in her class. She raised this issue because she felt that the boys were more able performers and they did not allow her to be involved in the games. Recently, Walls (2006) found that ability and not gender was the significant factor in both males and females PE learning environment. Indeed, Walls (2006) found that both low ability males and females did not enjoy their PE class, and often did not participate when they were grouped with high ability pupils. Walls (2006) also found that high ability females stated a preference for participating with similar ability males because of the level of competition they provided. However, previous research has found that females prefer to participate in different types of activities compared to males (Flintoff & Scraton, 2001) and participate for different reasons compared to males (Sirard et al., 2006). Consequently, it is important to note that the issues of females' participation patterns and preferences in PE may not be as uni-dimensional as Walls suggests.

4.6: Conclusion

The PE Review Group (2004) suggested that in order to increase participation in PE and physical activity, schools in Scotland should offer more choice from a wider range of activities to reflect the current trends in modern day society. The PE Review Group claims that young people in Scotland are opting out of PE (and physical activity) partly because they do not find the activities presented in the traditional curriculum relevant or meaningful. Previous research has shown that the key factors contributing to increased levels of intrinsic motivation to participate in PE and physical activity are perception of competence and associated feelings of enjoyment and interest (Corbin, 1999; Wang & Liu, 2007; Weiss & Ferrer-Caja, 2000; Welk, 1999). There was a need, therefore, to carry out Scottish-based research to investigate pupils' perceptions of, and experiences in, 'traditional' curricular activities such as TIG. In this study of an urban state secondary school and its three state primary schools, findings show that the P7 pupils valued the role of TIG within their PE curriculum more highly than the S4 pupils and that this view was associated with their perception of competence and their enjoyment of TIG. The focus group interviews confirmed this when pupils from all year groups discussed how they enjoyed the games where they were high in perceived competence and disliked the games where they were low in perceived competence. Additionally, the S2 and S4 pupils revealed that playing in the same team as more able peers reduced pupils' levels of involvement in the game and that this made them less motivated to want to participate in TIG. Implicit within this is that these pupils wanted to be involved in play. Those S2 and S4 pupils who said that they enjoyed small-sided games or games

where they were playing with pupils with a similar level of ability supported this further.

One of the limitations of this study is that only one focus group interview was carried out with the S2 and S4 pupils. Future research should seek the views of a larger number of pupils from different backgrounds, with different interests and different levels of ability in TIG. However, even though the samples were relatively small for these age groups, the findings from this study support previous research that has demonstrated a relationship between factors such as perception of competence, enjoyment, value and continued participation in physical activity (Li et al., 2007; Ommundsen, 2001; Papacharisis et al., 2003). Consequently, the results from this study may also support the notion that the way in which teachers deliver TIG within the PE setting is a very important factor in determining whether or not pupils enjoy, develop their competence in and continue to participate in TIG. However, if the place of TIG within the Scottish PE curriculum is to be preserved and even enhanced, more research should be carried out in order to understand pupils' views from a range of socio-demographic areas. Additionally, future research should investigate the relationship between the findings from this study and games teaching in Scottish schools. This may indicate that the problem lies with the way in which TIG are delivered in Scottish schools, rather than pupils' inability to relate to the activities that are delivered. Future research investigating TIG teaching may also advance our understanding of pedagogical approaches that aim to enhance game performance, enjoyment and ultimately encourage pupils to create a positive attitude toward TIG.

Chapter 5: Teachers' Beliefs and Pedagogical Practices

5.1: Introduction

There is an assumption that pupils are opting out of PE and physical activity in Scotland because they cannot relate to the traditional games that are presented to them, for example soccer and field hockey (Scottish Executive, 2004a). Previous research, however, suggests that young people drop out of PE because of their low levels of physical competence in PE (Corbin, 1999; Welk, 1999). Those pupils who are low in perceived competence are less motivated, do not enjoy and are less likely to continue to participate in PE. Results from chapter 4 indicated that the younger P7 pupils valued the role of TIG within their PE curriculum more highly than the older S4 pupils and that this view was associated with their perception of competence and their enjoyment of TIG. It would appear to be important therefore, to investigate the ways in which teachers teach TIG in order to understand the learning experiences pupils are faced with when entering into the PE and TIG environment. Moreover, since teachers are at the forefront of curriculum implementation and innovation in schools, it would seem logical to promote consultation with teachers on matters such as pupil participation in PE because of the in-depth and intimate knowledge they possess about their curriculum, colleagues, resources and pupils. The recommendations made by the Review Group on PE (Scottish Executive, 2004a) are based on previous reports that are indirectly related to the school context (National Health Service, 2003; Scottish Executive, 2003; Scottish Executive Health Department, 2003), but it is unclear if teachers have been directly consulted about the proposed changes. This is problematic because teachers become very resistant to

change when it is imposed upon them from the 'top down'. It can make them feel alienated from the process, especially if they believe that it will not be of benefit to them or their pupils (Curtner-Smith, 1999). Moreover, when teachers are forced to implement curricular changes from the 'top down', they either modify them to fit with their own beliefs and contexts, or they apply them at a very superficial level (Curtner-Smith, 1999). As a result, very little change takes place in the classroom and few improvements are made to teaching and learning (Spencer, 1996). An alternative approach to curriculum development is to involve teachers in the process so that they can present their ideas about key curriculum issues linked to pupil participation in PE and physical activity. Additionally, by engaging teachers in discourse about such issues, it may also be possible to understand their beliefs about the curriculum, teaching and learning, and thus information about the types of learning experiences they provide for their pupils when teaching TIG.

Teachers' beliefs are particularly important because they have a very powerful guiding effect on what they do. All teachers hold beliefs about the curriculum, their pupils and teaching and these beliefs influence their perceptions and judgements, which in turn influence how they teach (Cothran et al., 2005; Tsangaridou, 2006). In PE, teachers' beliefs are socially constructed, a process that begins when they are pupils in schools and continues throughout their professional years as teachers (Lawson, 1983). Consequently, Green (2002a) suggests that it is not enough to look at teachers' beliefs about PE in the context of their immediate circumstances. PE teachers' beliefs and practices are a mark of both the past and the present and have derived from their personal biographies, sporting identities and previous experiences.

However, their beliefs about PE are also influenced by their local context, which consists of a network of complex relationships in and around the world of work (Green, 2002a), including colleagues, pupils and parents. Consequently, in order to understand teachers' beliefs and practices, it is necessary to analyse them using a 'wide angled lens' (Curtner-Smith, 2002) situating them within the wider social processes and constraints of everyday life (Green, 1998). Teachers' beliefs, philosophies or ideologies, therefore, can be explained from a sociological perspective where their social world, experiences and knowledge are explored, and a deeper understanding of their practices is provided (Potrac et al., 2002). Green (2002b) uses 'figurational sociology' to explain how PE teachers construct their teaching 'philosophies', two salient features of which are context and habitus. From this perspective, it is not possible to explain the thoughts and beliefs of PE teachers as individuals independent of other individuals or groups (in the past as well as the present). Teachers' thoughts must be viewed as a consequence of their interdependence with other people, groups and contexts. Thus, to investigate teachers' thoughts about the PE curriculum, pupils, TIG and teaching TIG, it is necessary to explore more than just their immediate circumstances; teachers' past experiences and local context also must be examined.

Surprisingly, very little research investigations have investigated the relationship between teachers' beliefs and practices, even though they appear to have an important role in teaching (Tsangaridou, 2008). Therefore, the aim of the first part of this investigation was to explore teachers' beliefs about the curriculum, their pupils, TIG and teaching TIG through the use of semi-structured interviews, framed within

their own biographical experiences/history and their local context. It was of particular interest to investigate the ways in which PE teachers deliver TIG in order to understand the types of learning experiences they provide for their pupils.

It is possible to understand how teachers teach through the systematic observation of teacher behaviours. However, no matter how sophisticated an observer's checklist is, the data gathered would not contain evidence of why the teacher made certain decisions nor take into account the complex and dynamic environment in which he/she is teaching (Wojcik, 1993). Consequently, in order to understand how teachers teach TIG, it is important to examine their thoughts, decisions and the reasons for acting the way they do, or in other words, their practical knowledge (Carter, 1990). Practical knowledge includes knowledge and beliefs about teaching and is developed through experience and reflection in teaching. One of the ways in which teachers' knowledge and beliefs about teaching PE can be elicited, is by the use of video stimulated recall technique (Good & Brophy, 1997; Wilcox & Trudel, 1998). This is a technique that allows the teacher to 're-live' an episode of teaching and reflect on his or her actions. This technique is important because teachers may not always be able to give accurate accounts of their teaching behaviours (Good & Brophy, 1997), and what teachers say about their teaching may not always reflect what they actually do (Wilcox & Trudel, 1998). Video stimulated recall technique minimises the possibility of inaccurate self-representation by teachers and generates greater understanding into the relationship between teachers' beliefs and their teaching practice (Meade & McMeniman, 1992). Consequently, the main purpose of the second part of this investigation was to understand the ways in which both primary

and secondary PE teachers teach TIG by analysing their knowledge and beliefs about teaching through the use of video stimulated recall technique.

5.2: Part A: Teachers' Beliefs

5.2.1: Methods

5.2.1.1: Participants.

Data from eight PE teachers from the Scottish urban state secondary school (n=5) and its three urban state primary schools (n=3) were gathered for this study. Lisa, Kirsty, Alastair, Anthony and Donald (mean age: 35yrs; range: 23-55yrs) taught in the urban state secondary school. The other three teachers in this study were primary PE teachers; Margaret, Susan and Isobel (mean age: 52yrs; age range: 48-58yrs). They represented all of the PE teachers that taught in each of the three feeder primary state schools. The secondary school PE teachers varied in years of teaching experience. Two of the teachers had less than five years experience (Lisa and Anthony) and two had between nine and thirteen years experience (Kirsty and Donald). The remaining secondary PE teacher was the principal teacher of the department and had 32 years teaching experience (Alastair). Susan and Isobel were primary PE specialist teachers with over 20 years PE teaching experience. However, Margaret was not a specialist PE teacher, she was a primary class teacher with over 20 years teaching experience. Her school did not employ a PE specialist therefore she was given the responsibility of delivering the school's PE programme and had been doing so for the last two years. All of the teachers had a varied background in sports participation. With the exception of Kirsty, they all stated that their sporting careers began by playing TIG. Kirsty's sporting profile derived predominately from

trampolining and gymnastics. This dominant position of TIG in the sporting profiles of the PE teachers in this study reflects previous research into the sporting profiles of students entering into the PE profession (Placek et al., 1995).

5.2.1.2: Semi-structured interviews.

The purpose of the semi-structured interviews was to investigate the teachers' perspectives on their PE curricula, focussing on their beliefs about the role of TIG and teaching TIG within their PE curricula. The questions for the interviews were constructed in line with the main purpose of the study (Curtner-Smith, 1999). Following an introductory question to elicit information about the teachers' sporting and teaching backgrounds, the main areas of questioning were based around four main areas: beliefs about PE and the PE curriculum; beliefs about their pupils' and PE; beliefs about the role of TIG within their PE curriculum and beliefs about teaching TIG (Appendix 5). The questions associated with each area were then presented to a second researcher for discussion. Both researchers agreed that the questions were appropriate in terms of their potential to illicit responses linked to the issues under investigation. The questions were then piloted with two Scottish female PE teachers with 12 and 13 years of teaching experience, one in an urban state primary school in the Borders of Scotland and the other in an urban state secondary school in Stirling. After discussing each issue, the researcher provided a summary of the teacher's response to check for understanding and accuracy. This process was extremely valuable, because although no modifications were made to the questions, it demonstrated that the questions had encouraged the teachers to discuss, in detail, their beliefs about their PE curriculum, their pupils, TIG and teaching TIG.

All of the interviews for the main study took place at school and at a time that was most convenient for the teachers. The interviews were carried out and tape-recorded in a classroom free from distraction. As with the pilot study, the researcher provided a summary of the teacher's response to check for understanding and accuracy at the end of each discussion. This summary provided the main researcher with an opportunity to take field notes that highlighted the most salient issues raised by the teacher at that point in the interview. This also ensured that there was congruence between the researcher's interpretation and the teachers' intentions. Due to the teachers' teaching commitments, the maximum amount of time available to interview each teacher was 60 minutes. Consequently, the interviews lasted for between 40 and 60 minutes. All interviews were recorded using an audiocassette recorder and then transcribed verbatim within one month of the interview.

5.2.2: Data Analysis

The purpose of the data analysis was to interpret and attempt to understand the teachers' beliefs about their PE curriculum, their pupils, the role of TIG within their PE curriculum and their beliefs about teaching TIG within their PE curriculum. Consequently, the responses were analysed in line with these four areas of questioning (Taylor-Powell & Renner, 2003). The first phase of this analysis involved reading and then re-reading the texts in order to become familiar with the teachers' responses. In the subsequent phase of analysis, phrases were attached to key issues in order to summarise their meaning and identify the emergence of categories within each area of questioning (Glaser, 1964; Podlog & Eklund, 2006). Reference to the field notes that were taken during the interviews supported this

process. In order to ensure investigator triangulation, a second researcher independently carried out the same analysis of the raw data. Both researchers then discussed their findings until agreement was reached about the key issues (and categories) raised by the teachers during the interviews (Morgan et al., 2005b; Sproule et al., 2002).

5.2.3: Results

The qualitative data analysis resulted in the identification of categories that emerged from the main areas of questioning. Table 5.1 shows the areas of questioning and their associated categories.

Table 5.1: Areas of questioning and categories

Beliefs about PE and the PE curriculum.	The purpose(s) of PE. The PE curriculum.
The Pupils and PE	The pupils' motivation and participation in PE. Pupil competence in PE. Causes of pupil disengagement/disinterest in PE.
Beliefs about the role of TIG within their PE curriculum.	TIG within the PE curriculum. Reasons for including TIG within the PE curriculum. Causes of pupil disengagement/disinterest in TIG.
Beliefs about teaching TIG.	Teacher confidence teaching TIG. Approaches to teaching TIG. Facilitating pupil involvement during TIG lessons.

Primary School PE Teachers

Beliefs about PE and their PE Curriculum

The purposes of PE

The three teachers thought that PE was a very important part of their pupils' education. They all discussed PE with relation to social and emotional development as well as the promotion of health and fitness. Margaret believed that PE could help with the behaviour management of the class and provide opportunities for those who are less academic to do well. Susan explained that PE gives the pupils opportunities to be free to let off steam in a non-academic environment:

> I think they all just enjoy being a bit freer than in the classroom, moving, letting off steam. Susan

The PE curriculum

All three primary PE teachers described how their curricula aim to motivate the pupils by providing them with breadth, depth and choice of activity. Margaret described how her PE programme caters for different interests and abilities. Susan expressed a concern about her PE curriculum in that she sometimes felt that she was unable to spend enough time on one particular activity:

> Sometimes if you have too many activities you really don't get into much depth within the activity. Susan

All of the teachers explained how their PE curricula aimed to increase motivation and involvement and make sure that all pupils experienced success, no matter what their level of ability may be. One way in which they did this was by being involved

in the festivals and tournaments organised by the Local Authority Education Department. They designed their curricula with these events in mind so that the pupils have something to work towards.

The Pupils and PE

The pupils' motivation and participation in PE

The PE teachers from each of the three primary schools said that, in general, there were no issues with their pupils in terms of motivation, enjoyment or attendance. Margaret explained that there was an attendance problem in PE in her school, but that the situation was improving because of her close relationship with the pupils. She knows how to keep them interested, involved and enthused.

Pupil competence in PE

Only Margaret, the non-specialist PE teacher, made a link between motivation and ability levels. She described how some pupils opt out because they think that they lack skill. In response to a question about those pupils who opt out of PE, or those who appear to be less motivated in PE, Margaret responded:

> …they don't think they've got the ability or the skill and that's why if you build it from the basics up then at least you're giving them something to work on. Margaret

Causes of pupil disengagement/disinterest in PE

The three teachers described how external and emotional factors such as parental support and socio-economic background influenced children's views about PE and physical activity. Isobel, for example described how children from single parent families could

have difficulties instilling the discipline required to participate and commit to physical activities. Susan believed that some parents don't take time, or don't have the time to play with their children or take them to after school clubs:

> I think a lot of it might be their parents; maybe they're not encouraging them to take part. There might be difficulties at home. Susan

Isobel believed that pupils lack motivation or interest in PE because many teachers no longer take extra curricular clubs and some schools invite coaches in who do not provide the pupils with a quality learning experience. Margaret was the only teacher who said that the girls in her school seemed to be less motivated to take part in PE. She described some of her primary 7 (P7; pupils aged 11-12yrs) girls as '*hesitant*' and '*self-conscious*' about PE.

Beliefs About the Role of TIG within their PE Curriculum

TIG play within the PE curriculum

All of the teachers said that TIG were an important part of their PE curriculum. They stated that pupils enjoy TIG and are motivated to learn and play TIG. When asked specifically 'what was important about TIG', Susan explained:

> I think the enjoyment of working in a team and being a part of this team, having to get along, having to communicate, having to co-operate. Susan

Reasons for including TIG within the PE curriculum

The primary PE teachers highlighted 'cognitive development', 'discipline', 'respect for others', 'co-operating' and 'communicating' as important reasons for including TIG in their PE curriculum.

Causes of pupil disengagement/disinterest in TIG

Only Isobel identified a problem with pupils' participating in TIG, stating that some children find them difficult because they are unable to co-operate with other pupils in their class.

Beliefs about Teaching TIG

Teacher confidence teaching TIG

All of the teachers stated that they were confident when teaching TIG and that this was related to their enjoyment of teaching TIG. They explained that their confidence came from their knowledge of the activities, a personal interest in the activities and their personal performance in the activities.

Approaches to teaching TIG

All three teachers believed that the development of skill is very important in games teaching. In fact, they all believed that they have to develop the game skills before they can be successful in the game. Margaret also said that she has to convince the pupils that they have to develop their skills in order to improve their game playing performance. Isobel defined the good players as those with 'better skills'. She

explained that she selects teams so that there is a mixture of ability levels based on their ability to perform skills:

> It's also very important that the ones that have better skills will actually include the others. It's important that they bring them in and they don't exclude people. A game doesn't run with 2 or 3 good people. It's terribly important everybody must play. Isobel

The three primary teachers described how they taught games by selecting a skill, providing the pupils with a practice that enables them to focus on the technical points of the skill. If the pupils cannot cope with the practice activity presented to them, then Margaret changes the practice to make it simpler. Susan uses demonstrations to highlight the skill's key technical points and then organises a mini game at the end of the lesson. They considered games to be important because they can be used to highlight the skill. Both Margaret and Susan explained how they measure the pupils' performance by observing the effectiveness of the execution of the skill during mini games play.

Facilitating pupil involvement during TIG lessons

All of the teachers stressed the importance of trying to get everyone involved when teaching TIG, even if that sometimes means as an observer sitting at the side, or a more able performer helping a less able performer. Margaret discussed how differentiating her lesson encourages pupil involvement and described how she tries to teach skills in a way that challenges the pupils at the right level. Likewise, Isobel said that she wants all her pupils to experience a sense of achievement, no matter what their level of ability. Margaret described how she chooses different pupils to

demonstrate skills in order to get them involved during games play. All of the teachers explained how they organise mixed ability and mixed gender teams so that everyone can experience success and everyone is involved. Susan said that she sometimes conditions the game to increase involvement and to encourage sportsmanship. Margaret and Susan would occasionally organise groups so that they are made up of pupils of similar levels of ability.

Secondary PE Teachers

Beliefs about PE and the PE curriculum

The purposes of PE

All of the PE teachers that were interviewed believe that PE is an important part of the Scottish education system, for reasons that include health and fitness and the promotion of lifelong participation in physical activity. They also believed that PE should be fun and enjoyable. Moreover, Lisa thought that the key to encouraging children to participate in PE is to make it enjoyable. She believed that if pupils enjoy PE in school then they will continue to participate in physical activity outside school. Donald believed that PE is important because it provides the children with a break from the 'heavy' mental work that they have to do in the other subjects.

The PE curriculum

All of the teachers said that the PE curriculum at their school offers a balanced range of activities, providing pupils with a variety of different games such as rugby, hockey and football as well as activities such as dance, gymnastics and 'keep fit'. They also said that it was important that pupils are provided with some element of

choice, and that this is especially important for their more senior pupils. Alastair explained how the senior pupils are offered a choice between competitive and non-competitive (or aesthetic) activities, in order to cater for the less motivated individuals:

> We have a core who are highly motivated, there's a bottom end that doesn't do very much at all and that's one of the reasons why we've got the aesthetic programme, the non competitive individual programme, to try and bring them on board as well. Alastair

The Pupils and PE

The pupils' motivation and participation in PE

All of the teachers in the school described how, in general, there were no major problems with the pupils in terms of behaviour or participation in PE. They all said that the majority of the pupils seem to enjoy PE and appear to be motivated to take part. Donald explained how, on occasions, some pupils forget their kit but that this is not a problem because the school has kit for them to use. He also believed that *'virtually all the boys are motivated'* but that this is not the case for girls, an attitude which is due, in his opinion, to their low competence in PE.

Pupil competence in PE

The teachers in this PE department linked pupil enjoyment, motivation and involvement to the ability level of the pupils. According to the teachers, the high ability pupils, or the 'sporty' ones who go to after-school clubs, enjoy PE more, are more motivated, more involved and tend to stay involved in PE throughout their school years:

> You get the really sporty first and second years that'll keep going and you know they'll keep going all the way through. Kirsty

Anthony discussed the pupils' enjoyment of PE by referring to TIG, stating that their enjoyment (and ability level) stems from their own personal interest in TIG, because many of them play for the school football, rugby or hockey team. All of the PE staff believed that the pupils who are 'turned off' by PE are in the minority within the school and are often those pupils who are less competent in an activity. Both Donald and Lisa discuss this issue by referring to girls and their lack of competence and enjoyment in TIG:

> I would say for the girls, it's almost half and half, half really enjoy team games and half are just turned off by it. Today I've just had an all boys football class and I would say about 98% of them are very much motivated and happy to play. Lisa

All of the secondary PE teachers that were interviewed believed that many of the girls are less able in PE and have no confidence in their own ability and as a result, do not get involved:

> I think that it's because they (the girls) are poor. They've got no confidence in their own ability. Donald

However, Kirsty said that pupils, regardless of gender, do not want to be seen to make a mistake in front of their friends. She described a male pupil in one of her swimming classes who was a very able games player, but a very weak swimmer. She said that he would rather have detention than take part in a swimming lesson.

Causes of pupil disengagement/disinterest in PE

Kirsty, Alastair and Donald thought that many of the pupils who have been 'turned off' by PE have had a bad or negative experience during a PE lesson. They also believed that some parents may have reinforced these negative feelings towards PE:

> Some of their parents have a perception of PE from when they were at school and some of them bring their negative perceptions to school. A lot of them can bring notes to be excused from virtually anything. Alastair

Kirsty and Donald also thought that some secondary pupils are 'turned off' by PE because they have had poor experiences of PE in their primary school. Either they have not had enough PE in primary school or the quality of their experience has been compromised by the fact that a non-specialist teacher has delivered the PE curriculum.

Beliefs About the Role of TIG within their PE Curriculum

TIG within the PE curriculum

All of the teachers in the department believed that TIG such as soccer, hockey and rugby play a very important role within the PE curriculum. Children can relate to these sports and do enjoy playing them:

> I think that it's just absolutely essential that team sports are there along with individual. Donald

Only Kirsty made an additional comment stating that TIG were not the most important part of the PE curriculum and that children benefit from taking part in a range of activities.

Reasons for including TIG within the PE curriculum

The teachers described a number of reasons for learning TIG, including the development of skills such as co-operation, teamwork, confidence, problem solving, interacting, discussing and overcoming difficulties. Lisa described some of these as '*life skills*'.

Causes of pupil disengagement/disinterest in TIG

Donald thought that children opt out of playing TIG because their primary school PE experience did not develop their competence to a high enough level:

> So I think they're switched off to a certain degree when they arrive. You almost have to reinvent the wheel again I think and get them built into the foundations of the sports and try and bring them through. Donald

Donald also believed that some pupils lose interest because there are no opportunities for them to develop and improve beyond their curricular PE. Only the best players are selected for the school teams in extra curricular soccer and those that are not selected have no further opportunities to participate. The club system, even the school club system, is very elitist.

Beliefs about Teaching TIG

Teacher confidence teaching TIG

All of the teachers enjoyed teaching TIG and were confident when teaching TIG. Their confidence derived from an in-depth knowledge of the activity and from experience of teaching the activity. Lisa and Donald also said that their confidence derived from their ability to play TIG. All of the teachers said that they were confident in teaching TIG, all except Kirsty who lacked confidence, especially in teaching rugby. Her lack of confidence was linked to lack of knowledge of rules and practices:

> Not confident at all to teach rugby. I wouldn't even know where to start to teach rugby. Kirsty

Anthony also described how he lacked confidence teaching rugby because of his perceived lack of knowledge, particularly with relation to the rules of the game during games play. He said that he has no problem in teaching the skills of rugby but he finds it difficult to teach and manage rugby games.

Approaches to teaching TIG

All of the PE teachers described how they teach TIG by using both skills practices and mini games. However, they all believed that it is very important that the pupils can perform the skills and they use mini games to highlight a particular skill.

> Depending on what I teach and depending on their knowledge of it beforehand decides how quickly I can go on to little mini games. Lisa

Alastair and Donald said that they tended not to address tactical understanding until the basic skills have been developed. Donald described how in secondary 1 (S1: pupils aged 11-12 yrs) and secondary 2 (S2: pupils aged 12-13 yrs) he would focus on the basics skills of games play, whereas he would work on tactical understanding with those secondary 5 (S5; pupils aged 16-17 yrs) and secondary 6 (S6; pupils aged 17-18 yrs) pupils who elect to take PE as a certificated subject in Scotland (Higher Still PE). Kirsty said that she tends to focus on skills when she is teaching a game that she lacks confidence in:

> I'd probably approach it differently (if teaching rugby). I'd maybe work on more of certain skills, you know like tackling. Kirsty

Both Lisa and Anthony measured the success of their games teaching by observing the way in which their pupils execute the skills during the game at the end of the lesson. Donald discussed the measurement of success in terms of the pupils' work rate during the lesson and in their ability to answer questions about the work they had been doing.

Facilitating pupil involvement during TIG lessons

All of the teachers described how pupils seem to enjoy playing games and mini games and how they enable all pupils to be involved. However, somewhat contrary to this, Lisa said that she often begins a lesson with individual skills because for some pupils, it is the only opportunity they have to work with the ball:

> Especially in the warm up, I like to give them individual skills to work on so they're not put under pressure by anyone else at that stage. Lisa

Lisa recognised that some pupils find it difficult to be involved in games play and Anthony believed that lack of involvement in games play was one of the main reasons that pupils disliked TIG:

> Probably not getting the ball, like you always hear that they don't get a pass. They don't get to shoot that often. Anthony

Alastair explained how in one class, he let the more able boys play games, whilst he worked with the less able to develop their technical ability. He said that this was a good way to organise this class because the more able pupils did not have to pass to the less able, and the less able did not have to worry about trying to keep up with pupils that were more competent than them. All of the teachers in the department said that they *usually* organise the groups and teams in their class so that there is a mixture of ability levels. However, Donald said that there may be occasions where he would separate ability levels for games, and Lisa said that sometimes she would allow the pupils to play with their friends, irrespective of ability.

Although all of the teachers said that they use a combination of skills practices and games when teaching TIG, they all described how they try to increase involvement by beginning each lesson with the development of technique outside of the game context, before progressively introducing the pupils to more 'game-like' demands. Both Anthony and Alastair said that they focus on skills with the less able and

Donald developed skills with the younger pupils. Additionally, if any pupils were experiencing difficulties, all of the PE teachers would take the practice back a level:

> No I don't persevere, I would go back. If there's an obvious weakness in everyone's performance, you know a general weakness identified, I think you have to overcome that general weakness before you can make any progress with anything more technical. Donald

5.3: Part A: Discussion

5.3.1: Beliefs about PE and their PE Curriculum

The PE curricula at this urban state secondary school in Edinburgh and its three feeder urban state primary schools were based on a traditional framework of dance, gymnastics and games, with a particularly strong emphasis on TIG. None of the PE teachers in this study described any of these more traditional activities in a negative light and said that, through their broad and balanced PE curricula, they were able to encourage pupil participation and enjoyment. MacPhail (2002) examined some of the reasons pupils in Scotland elected to take certificated PE and found that one of the main reasons for doing so was because the pupils had enjoyed their previous PE experiences. In her review, MacPhail (2002) highlighted a number of reasons for taking/not taking and liking /disliking PE, none of which were linked to the type of activities the pupils experienced in their PE curricula. Similarly, none of the teachers in the present study believed that the pupils in their school could not relate to the activities in their PE curriculum.

Against the backdrop of their own traditional curricula (where there was a strong presence of TIG) the teachers in this study believed that they could promote ideas

associated with health and continued participation in physical activity (Scottish Executive 2004a, 2004b). This is somewhat in contrast to other views about the types of activities that can promote ideas about health and continued participation. For example, Fairclough et al. (2002) suggest that PE should provide more 'lifetime' activities such as jogging, cycling or dancing. This idea reflects the recommendation made by the Review Group on PE (Scottish Executive, 2004a) who suggested that the PE curriculum should be wider and include more 'lifetime' activities in order to engage all pupils in PE. Interestingly, although the teachers in this study discussed the role of PE in terms of its contribution to the development of pupils' health and fitness, they did not discuss these issues in relation to TIG. This was rather unexpected, especially since recent research that has taken place to investigate children's activity levels during PE lessons, has shown that pupils may work harder during TIG lessons compared to any other lesson within the PE curriculum (Fairclough & Stratton, 2005). Furthermore, intermittent high intensity training with periods of active rest, an activity pattern that reflects the intermittent nature of TIG play, has the potential to stimulate physiological changes that both improves aerobic fitness and has implications for improving health (Burgomaster et al., 2005; McMillan et al., 2005; Ratel et al., 2004). This lack of awareness by the PE teachers in this study about the health benefits of participating in TIG was somewhat mirrored in a previous study by Green (2000), who found that PE teachers spoke about health issues in a very vague way and it was unclear as to how they integrated 'health' ideas into their PE teaching. Certainly, in this study, there was no explicit link made by the teachers about the relationship between TIG and health, although they did raise the general notion of health when discussing the purposes of PE.

The teachers in this study also believed that PE was important for reasons associated with 'enjoyment' and a break from the heavy demands of the more 'academic' curriculum. Providing pupils with enjoyable experiences in PE is extremely important because enjoyment is a critical factor in determining motivation to participate (Carroll & Loumidis, 2001; Wang & Liu, 2007). Additionally, there is some evidence to suggest that enjoyment is increased by being able to show competence, which again, results in continued participation in physical activity (Carroll & Loumidis, 2001; Wang & Liu, 2007). This is important because it is questionable as to how much a PE curriculum with enjoyment as the main focus would impact on pupils' competence levels. This may not be such an issue in the primary years because most pre-adolescent children inherently enjoy taking part in PE. However, as they move toward adolescence, pupils' perception of their own competence plays an increasingly prominent role in their enjoyment of, and continued participation in PE and physical activity (Corbin, 1999; Welk, 1999).

5.3.2: The Pupils and PE

All of the teachers in this study believed that there was only a minority of pupils who were disengaged in PE. Additionally, they believed that this minority was made up of less able pupils. The secondary PE teachers explained that the more able pupils were often the ones that took part in extra curricular activities and this provided them with more opportunities to develop and further improve their performance. They believed that this would encourage these pupils to continue to participate in PE and physical activity. The secondary school teachers also highlighted a relationship between ability level in TIG and enjoyment of TIG. Those pupils that were more

able performers in TIG enjoyed them more and were more motivated to play TIG. Those pupils who were less able performers did not seem to enjoy their TIG experiences. These views reflect the findings from the previous chapter where results indicated a relationship between pupils' perception of competence in TIG, their enjoyment of TIG and the amount of value they attached to TIG within their PE curriculum. Additionally, the previous chapter found that younger pupils (age 11-12 yrs) valued the role of TIG more than older pupils (age 15-16yrs) within their PE curriculum and that this was related to their higher perception of competence in, and enjoyment of, TIG. Another issue that was raised by all of the secondary school teachers, but only by Margaret from the primary schools, in relation to enjoyment was that of gender. The teachers explained that many of the girls did not enjoy TIG because of their lack of ability. These findings are reflected in chapter 4 and in an earlier study carried out by Griffin (1984), who found that the majority of the female pupils participating in a co-ed middle school team sports unit were of low ability and as a result, tended to be less involved in play during games lessons. The development of pupils' competence in TIG (and subsequent enjoyment), therefore, may be an important factor in determining whether or not they continue to participate in TIG as they move through their school years. It is important, therefore, to understand the ways in which teachers teach TIG within PE and to examine the extent to which they focus on the development of pupil performance. Of concern, however, was the fact that none of the teachers in this study discussed improving performance as a key reason for participating in TIG, or including TIG in the PE curriculum, which is surprising since improving performance is one of the main aims of PE according to

Scottish government documentation (SOED, 1992; SEB, 1988; SEB, 1993; SCCC, 1997).

5.3.3: Beliefs About the Role of TIG within their PE Curriculum

The teachers in this study believed that TIG have a critical role within the traditional curriculum, focussing mainly on the development of cognitive (e.g., problem solving) and affective skills (e.g., co-operating) when justifying their place in the curriculum. Only Kirsty took a less favourable stance with regards to the importance of TIG, which was unsurprising because of her physical activity biography. Kirsty's personal interests were gymnastics and trampolining, whereas all of the other teachers in this study had played TIG from an early age. Previous research has shown that teachers' biographies and sporting identities influence their beliefs about the pupils, the curriculum, how they teach (Green, 2002a; Pajares, 1992) and the confidence with which they teach (MacLean, 2007). These beliefs derive from past experiences in sport and school and are often based on activities or tasks they have demonstrated competence in. It was perhaps expected, therefore, that most of the PE teachers in this study valued the role of TIG within the more traditional curriculum since it appears to be self-replicating, and therefore somewhat self-fulfilling (Green, 2002a). In an investigation into the ways in which teachers interpreted the National Curriculum Physical Education (NCPE) in England, Curtner-Smith (1999) identified a group of teachers who highly valued the role of traditional team games within the PE curriculum. All of the members of this group had participated in a traditional team game (rugby, soccer, cricket, netball or field hockey) at a high level and all used a very direct approach to teaching games, focussing on the development of

game skills and strategies. In another study investigating urban teachers' use of productive and reproductive teaching styles within the NCPE in England, Curtner-Smith et al. (2001) found that the teachers in their study used reproductive styles most of the time, and more specifically, the practice style. Since this style has been shown to be most effective to teach motor skills, Curtner-Smith et al. (2001) suggested that the focus for the teachers in this group when teaching PE was on improving their pupils' motor skill performance.

5.3.4: Beliefs About Teaching TIG

All of the teachers interviewed described how they focused on the development of motor 'skills-first' in order to develop game performance. They believed that pupils had to learn the 'basics' before they could be effective during games play. They also highlighted that one of their main aims when teaching TIG is to make sure that all of their pupils are involved in the lesson and the game. One of the ways in which they aimed to achieve this was to begin each lesson with the development of on-the-ball technique outside of the game context before progressively introducing the pupils to more 'game-like' demands. However, one of the problems with this approach is that the teacher is making the assumption that game performance is predominantly about the player with the ball. Most of the time a player spends on the pitch or the court is spent off the ball. Pupils need to be aware of this, understanding that their involvement in the game when they don't have the ball is just as important as their involvement when they do have the ball.

5.4: Part B: Beliefs About Teaching Team Invasion Games

5.4.1: Methods

5.4.1.1: Participants.

All of the teachers that took part in the semi-structured interviews in Part A of the present chapter took part in the video stimulated recall interviews with the exception of Kirsty, Anthony and Donald.

5.4.1.2: Teacher observations.

Naturalistic observation and video analysis were used to gather descriptive information about the content the teacher delivered during the lessons (Gay, 1996). Isobel was observed teaching the fourth lesson of a P7 indoor hockey class (n=21, male=11; female=10; age 11.5 $\pm$ 0.3yrs), Susan was observed teaching the fourth lesson of a primary 7 (P7) basketball class (n=24, male=13; female=11; age 11.5 $\pm$ 0.2yrs) and Margaret was observed teaching the fifth lesson a P7 basketball class (n=24, male=13; female=11; age 11.5 $\pm$ 0.3yrs). All of the primary TIG blocks were eight weeks long. Alastair was observed teaching the fourth lesson of a secondary 1 (S1) boys rugby class (n=30; age 12.5 $\pm$0.3yrs) and Lisa was observed teaching the third lesson of a S1 girls hockey class (n=25; age 12.5 $\pm$0.3yrs). The secondary school TIG blocks were 10 weeks long. The primary school lessons were between 50 and 60 minutes long and the secondary school lessons were 80 minutes long (for both the primary and the secondary lessons, this included the time it took for the pupils to change their clothing before and after the lesson).

5.4.1.3: Video stimulated recall interview.

Video stimulated recall interview technique (Good & Brophy, 1997; Wilcox & Trudel, 1998) was used in this study to elicit the teachers' knowledge and beliefs about teaching TIG. This procedure was used because of the relationship between teachers' practical knowledge, beliefs about teaching and how they actually teach (Carter, 1990; Cothran et al., 2005; Pajares; 1992; Zanting et al., 2001).

Each teacher was recorded on video teaching a TIG lesson. All of the teachers said that they had taught in front of another teacher within the last 12 months, although not for evaluative purposes and none of them had been filmed teaching during this period. It is acknowledged that this is a potential limitation of the present study since it is conceivable that the teachers changed their behaviours and teaching approaches due to the presence of the researcher and the camera. Nevertheless, after each lesson, all of the teachers said that they felt comfortable teaching in front of the camera and that they were not aware that its presence had impacted on their teaching behaviours.

Immediately after the lesson, the video footage was edited to highlight either a period of transition from one episode to another during the lesson, or an instance where the teacher intervened with a pupil in order to reinforce or change a particular aspect of his/her performance. The editing process resulted in the development of between four and five video clips, the duration of which ranged between 38 seconds and four minutes. These clips were shown to each teacher in conjunction with a series of questions designed to elicit their thoughts about their teaching and the reasons underpinning their teaching behaviours. The questions were specific to each teacher

and to each clip, but in general included questions such as: 'What were you doing?', 'Why did you do that?', 'Is that important to you and why?'. These interviews took place on the same day as the lessons were filmed to ensure that the teachers were able to recall the context of each clip. As with the pre-lesson interviews, the researcher provided a summary of the teacher's response to check for understanding and accuracy. The interviews took between 40 and 50 minutes and all interviews were recorded using an audiocassette recorder and transcribed verbatim.

5.4.2: Data Analysis

5.4.2.1: Teacher observations.

Member checking of the field notes was used to establish the accuracy and the trustworthiness of the descriptive data whilst reducing the impact of subjective bias (Lincoln & Guba, 1985). All of the teachers agreed with the accuracy of the data. The video footage was also used to verify the accuracy of the field notes and to gather more detailed information about the content the teacher delivered.

5.4.2.2: Video stimulated recall interviews.

The purpose of the data analysis for the video stimulated recall interviews was to develop a more detailed understanding of the types of teaching strategies used by the teachers in this study. In addition to this, the aim of this analysis was to create an accurate representation of each individual teacher in relation to how they taught TIG and the beliefs that underpinned their teaching. The same two researchers who analysed the data in Part A analysed the video stimulated recall data. The first phase of this analysis involved both researchers independently reading the transcripts and

observing the corresponding video clips. This enabled them to develop an understanding of the way each teacher taught TIG and the beliefs that underpinned their teaching. Both researchers then independently attached phrases to key issues that emerged from the interview data in order to summarise their meaning and generate a teaching profile for each teacher. In the final phase of this process, both researchers discussed their findings in relation to each individual teacher until they came to a consensus about the key beliefs that governed their TIG teaching practice (Morgan et al., 2005b; Sproule et al., 2002). Both researchers then looked at the teaching approaches and beliefs across all of the teachers in this study and agreed that the issues raised by the teachers could be categorised in terms of their knowledge and beliefs about TIG in terms of teaching *skills* and teaching the *game.* It was also important to highlight the teachers' emphasis on pupil *involvement* when they focused on either the skills or the game (see table 5.2).

5.4.3: Results

Table 5.2: Topics of discussion from video stimulated recall interviews

	Teaching Skills	Involvement	Teaching the Game
Primary and Secondary Teachers	*Develop skill/technique before games play. *Providing progressive practices.	*Mixed ability groups. *More able pupils help less able.	*Authentic games are important. *Assess skill execution in a game context.
Primary Teachers only	*General movement skills (running and balance) are important. *Pupils have to understand technique. *Pupils have to know that it's important to develop good technique. *Demonstrations (for technique). *Feedback (technical). *Peer observation (technique).	*Make practice easier if too difficult. *Select different pupils for demonstration. *Pupils make decisions about rules and game condition. *Condition games to involve less able. *Verbal encouragement. *Teacher as a participant to distribute the ball.	*Understanding rules is important. *'Free expression' in games is important. *Co-operating and developing relationships are important. *Challenge; most improved player and most improved team.
Secondary Teachers only	*Demonstrations (for organisation and technique).	*Provide more opportunities to have the ball. *Hand over responsibility to pupils for learning.	*Competition in learning is important. *Pupil understanding of rules and boundaries is important. *Use of terms 'attack' and 'defend'. *Make links to other TIG game principles to develop understanding *Question and answer to guide tactical understanding.

Primary Teachers

Isobel

Lesson objectives and content

Isobel taught a co-ed P7 indoor hockey lesson that lasted for 50 minutes. Isobel's learning objectives were to develop a number of skills, including control of the ball, control of the stick, body control and balance. After a warm-up, where she organised

some running drills and dynamic stretching, she organised six stations so that the pupils could focus on the development of specific skills. The six stations involved activities that encouraged the pupils either to push or flick the ball to a target, or dribble the ball in and out of cones using various techniques. The pupils were engaged in these activities for approximately 32 minutes. Isobel only left enough time for one three-minute 5v5 game at the end of the lesson. This meant that more than half of the class (n=12) did not get the opportunity to play a game.

Teaching skills

Isobel explained that she focused on these skills because they were necessary to increase pupil involvement during the games:

> A number of the children who have difficulties in that class have really improved. They've built up their skills quite well and it makes a difference to the games.

She said that if the pupils were unable to perform these skills, no one would pass them the ball during the game:

> It's very important if you're going to play in a game otherwise nobody is going to pass a ball to you.

Isobel organised six stations because she wanted to get as many pupils involved in the lesson as possible (although not everyone was given an opportunity to play a game at the end):

> You want as few people standing and with 6 stations that lets us have about 4 people in each group and, in most of the stations, everybody was working nearly all the time in their area.

Teaching the game

During the game, Isobel said that she wanted the pupils to be balanced, to move both on and off the ball and to develop '*relationships*' with each other:

> I wanted to see from them a little bit of balance, moving around whether they had the ball or not. I wanted to see relationships with their own team, relationships to their opponents.

The teams were organised so that they included a mixture of ability levels and so that the better players passed to the weaker players. She took part in the game to try to facilitate everyone's involvement and encourage the players to move into appropriate spaces to receive the ball:

> It's easier sometimes if you are in amongst them. It can be dangerous at times but often I'm in there because if one team are more confident and do better, I would come in and make sure that I'm distributing the ball.

Susan

Lesson objectives and content

Susan taught a co-ed P7 basketball lesson that lasted for 45 minutes and her learning objectives were to develop movement to receive the ball and a long pass to spread play during the game. This objective had derived from her observations in previous lessons. She had noticed that they were all playing too close to the ball during the games, so she wanted to work on their ability to play the long pass:

> To spread out more in the game and use the space more. Two weeks ago in the game, they weren't doing that, they were bunched together and some of the pupils just stand still, they weren't moving to get free.

She aimed to achieve this by providing the pupils with passing practices that focused on each technique. After practices that focused on the bounce pass then the two-handed overhead pass, the pupils took part in a practice that involved a receiver moving away from a thrower to show for the ball so that he/she could receive the ball on the move. The pupils took part in these activities for almost 10 out of the 45 minutes of activity time. The remainder of their time engaged in activity (almost 14 minutes) was spent playing 4v4 games on one small basketball court.

Teaching the skills

Susan explained that her lesson was a very typical lesson where she focused on a skill before applying it in a game. Susan focused on passing by reinforcing key technical points throughout the lesson. She also provided a demonstration to try to ensure that they performed the skill correctly and so that the learning environment was safe. At the beginning of the lesson she did some shuttle runs using the bounce pass. She did this because she believed that the bounce pass would give the less able pupils an easier passing option:

> The bounce pass first was basically just a warm up. They don't use it as much in the game but for some of the less able ones it gives them more familiarity with the ball so they're not going to be doing hard passes.

She also said that if she had more time during the lesson with the class, she would spend more time with the skills practices (warm-up) before moving on to the games:

> I might use a bit more of a warm up and if I had fewer children and more time, some schools have bigger gyms and things don't take as long. When you get 30 children, everything takes a little bit longer so you can include more in it with smaller classes so I would probably spend a little bit more time on the warm up and I wouldn't need quite so much time on the games because we have too many children so I'd maybe spend more time on practicing the skills, a little bit more on them demonstrating good skills.

Teaching the game

Susan left 20 minutes for the pupils to play games stating that the game is very important to her. However, games were played for approximately 14 minutes because of the length of time it took to organise the pupils into teams and explain some of the rules. Additionally, eight pupils could play at any one time because there was only one small basketball court which was slightly larger than a full-sized badminton court. Susan continued to reinforce some basic rules during the game. She observed the game to see if they would play the long pass and, at times, she verbally encouraged them to do this:

> Just to remind them about it and to tie it all together and to have them produce a better game. Just to jog their memory once again and give them something to think about.

She recognised that there was a mixture of ability levels in the class and, in order to involve all ability levels in the game, she picked the pupils that would take the sideline balls:

> Yes, sometimes you just have to do it directly (select who to take the side line ball) and I think they're happy with that.

Margaret

Lesson objectives and content

Margaret also taught a co-ed P7 basketball lesson for 45 minutes, and her learning objectives were to develop dribbling and passing skills. These were the main skills the pupils had been working on in previous weeks and Margaret aimed to develop them further so that they could be applied more successfully in a game:

> Over the weeks, what I've tried to do is build skill development into a game and I've taught the skills rather than allowing them free reign.

Margaret provided progressive practices and reinforced technical points throughout the lesson. The pupils were engaged in the skills practices for almost 9 minutes of the 45 minute lesson. Margaret then devoted a further quarter of the pupils' activity time to playing 4v4 games. However, like Susan, only eight pupils could play at any one time because there was only one small basketball court.

Teaching skills

Margaret discussed the importance of developing fundamental skills, not just in basketball, but also in other TIG such as soccer, referring to concepts such as transfer and progression across TIG in order to develop skills. In one of the dribbling practices where the pupils had to protect the ball, she referred to the game of soccer:

> I made that reference because in the programme of work I'm making I'm including all invasion games for the children so I can make a link between the skills we need to use for team games. I wanted them to be aware of that link.

She organised skills' practices where she was in control over the learning environment. However, there was one episode where the pupils could move in any direction to keep possession of their ball. She believed that the pupils found this too difficult due to the fact that some of the pupils did not always have control of their ball. Consequently, she made this activity easier for the pupils by restricting their movement so that they all moved in straight lines:

> I wasn't satisfied that the children were keeping the dribbling close to their bodies. I didn't feel they were using the space well enough and I didn't feel that they had the idea of moving with the ball, dribbling and out smarting their opponent. Therefore, I did what I would do in any lesson, you take the lesson down so that you can see that the skill is being applied.

She used demonstrations to highlight key technical points for each skill, and made sure that she used a variety of pupils for demonstrations so that they were all involved. She used peer observation quite a lot in her teaching to encourage the pupils to understand the skills and to give them responsibility for their own learning:

> To make them involved, to make them more observant, to look at each other's play and when it comes their turn to try and put what they've been saying into action in their own game.

Teaching the game

During the games at the end of the lesson, she gave the pupils a bit more freedom to see if they were able to apply the skills they had been working on in the game:

> I wanted them just to get a feel for the game and I wanted them all involved in the game and not to hold them up and be too duty bound by stopping the game and saying 'you're not doing this correctly'.

When picking the teams, she selected the best players first and then made sure that there was a mix of ability and of gender. She did this because she did not want any one team to dominate play:

> I tried to choose a mixed ability team, mixed sex team to ensure that it's not one set of children dominating a game and the other set of children becoming demoralised and not having the opportunity to intercept the ball and not perhaps even having the opportunity to throw and receive a ball.

At the end of the lesson, she nominated the most improved player and the most improved team. This was to encourage the pupils to be involved and raise their performance levels to the challenge set.

Secondary Teachers

Alastair

Lesson objectives and content

Alastair's learning objectives in the S1 boys rugby lesson were to introduce the five-man scrum and to apply it in a game. He also aimed to fine-tune the pupils' passing skills:

> The main objective of the lesson was to teach scrummage, to put it into the game…it's important to fine tune their passing skills. We do progressive practices so that they improve their peripheral vision, looking to see to make the pass, making the pass a wee bit wider, receiving, running forward and we do that every week.

The lesson lasted for 55 minutes and consisted of passing practices before the introduction of unopposed five-man scrum practice and then a game. The practices took up almost 30%, or 16 minutes, of the pupils' time in the lesson and almost one third of the pupils' lesson time was spent playing a 15v15 game.

Teaching the skills

Alastair wanted the pupils to learn about the skills, rules and regulations of the game and provide them with the types of 'real' experiences they would encounter if they were playing for the school rugby team:

> We wouldn't take it up to an 8-man scrummage and, because we have a school team and they use a five-man scrummage, we try to replicate that kind of standard.

Each pupil had to try all five positions during the scrum practice because Alastair wanted all of the pupils to be involved. Alastair was also very keen to hand over some responsibilities to the pupils by nominating pupils to lead a group through the practice. This player was usually a more experienced/able rugby player:

> When I asked for one person from each group, it was somebody who, in the past few weeks, had shown that they had a fairly good background knowledge or who was playing for the school team or who was going to rugby practice. We try and use more enterprise activities to give them some responsibility for their learning and I think it works.

Teaching the game

At the end they played a whole class game because Alastair felt that he had to be in control for safety reasons. During the game, Alastair said that his job was to guide

the game and encourage the pupils to consider options that he suggested in the hope that they would then be able to see the options for themselves:

> At certain points in the game, if you're working on one side, you can say, 'right lads, this is what we'll try and do now, let's try and get the ball into the gap'. You don't give the feedback to the other team and if that player is successful then you can reflect on what you did.

Alastair made sure that the better rugby players in the class were equally spread across both teams because he believed that this would give everyone in the class an opportunity to be involved.

Lisa

Lesson objectives and content

Lisa taught an S1 girls hockey lesson that lasted for 58 minutes. Her learning objectives were to develop the pupils' understanding of defending and the basic skills for defending. She had covered some attacking skills in previous lessons and believed that it was important to introduce some defending skills too:

> We've done some attacking skills already, passing and dribbling and beating a defender, so I thought I'd work on their ability to take the ball from another player and to then introduce this into small sided games.

After some jogging and stretching, Lisa asked the pupils to dribble a ball into a space to avoid players and then move away from a partner. They did this for a large part of the lesson, spending almost 20% of the activity time engaged in these tasks. 10% of the activity time was spent performing tasks that emphasised a strong, low defensive

stance, which included a 1v1 game where they had to attack and defend a small goal on a long narrow pitch. Finally the girls played 4v4 games of hockey for almost 10 minutes of the 58-minute lesson. All of the pupils played simultaneously because there was enough room for three pitches.

Teaching the skills

Lisa began her lesson by providing the pupils with a ball each and, although she did this to develop their technical performance, she also did this because she recognised that they may not all be involved during the 4v4 game:

> Dribbling with a ball each because when we get into games, the more dominant players would perhaps keep a hold of the ball and some players don't get a shot of the ball at all. So, I always let them have a ball each in the warm up.

Lisa explained that in most of the practices she organised, she was looking for 'correct technique', although she did link this to tactical principles such as '*looking for space and attacking space*':

> I was looking for them to have the correct technique for their handgrip on the stick. Preferably low body position with their knees bent, trying to make sure they keep their head to look where they're going and look for the space within the 'D' because it is very crowded, to encourage them which will then come into the games later on – looking for space and attacking space.

Teaching the game

Lisa aimed to develop the pupils' skills through mini games. She believes that competition is important because the pupils should understand that they have to work

to get the ball. She also believes that it develops their understanding of the purposes of the game in terms of 'attacking space, reaching targets, understanding boundaries and rules'. Lisa also referred to the game of soccer to help the girls understand each concept because many of the girls in this class attended extra-curricular soccer sessions:

> It was because a lot of the girls in that group are footballers as well. They come to my after school football. So, if they didn't necessarily understand that aspect in terms of hockey because it was newer to them, I wanted to emphasise the point that it's very similar to another invasive game as is football.

Lisa organised 1v1 games to highlight some of the technical points related to defending. The pupils played 4v4 to reinforce and informally assess all of the skills the pupils had covered in the 'block' so far, some of which linked to the concept of 'defending':

> It was a matter of shouting it over them just to make them aware that it wasn't just defending that we were looking at. It's a matter of passing and dribbling and working as a team more than anything.

The teams were made up of a mixture of abilities so that one team was not stronger than the other.

5.5: Part B: Discussion

5.5.1: Teaching Skills

Almost all of the teachers explained their planned learning objectives in terms of the development of skills. Susan added some context to her objective by stating that she wanted to introduce the long pass so that the pupils would spread play more.

However, although she introduced a practice that encouraged the pupils to play a long pass, the focus of her interventions were related to the technical elements of the skill, with no reference to the tactical reasons for performing the skill. The practice that she introduced to the class involved a receiver moving away from the ball carrier, which has the potential to develop the pupils' understanding of the relational aspects of the skill (Rovegno et al., 2001). However, no other contextual features linked to a more authentic game environment were made evident in this practice. At the beginning of Margaret's lesson, she provided the pupils with a practice that included environmental features that are important when learning to dribble with the ball in basketball. She asked the pupils to dribble the ball whilst looking for space to avoid other players, thus developing their ability to control the ball under pressure, look up to see the space and adapt their movements to meet the demands of the environment. However, explicit links to the game were not made and, when she recognised that this increased the errors made by the pupils, she simplified the practice by making the pupils dribble in straight lines. This creates a much more predicable and inauthentic learning environment. Lisa's objective was not exclusively linked to the development of a specific game skill. Her learning objective was to develop the pupils' understanding of 'defending' in hockey. However, Lisa seemed to focus more on the technique required to execute a 'block tackle' in hockey rather than principles, or 'action rules' linked to defending the target, regaining possession of the ball and challenging the opponents' progression (Grehaigne et al., 2005). However, she did refer to '*looking for space and attacking space*' when she explained the importance of dribbling the ball with your head up.

She also provided her pupils with practices or mini games that placed more authentic demands on their performance.

All of the teachers in this study discussed the importance of the development of technique (or skill) for effective game performance. Margaret, for example, said that she had to convince the pupils that they could only access the game in an effective way if they developed 'skills first' and Isobel organised her whole lesson around the development of hockey specific techniques. The development of skill is important when teaching TIG, but this is a rather reductionist view of teaching TIG. By focussing on skills, the teacher fails to take account of the other game demands players have to manage in order to be effective during games play. For example, the effect the opposition has on the game and the implicit or explicit decisions that have to be taken by the group in order to defeat the opposition (Grehaigne et al., 2005).

The teachers' discussions about the importance of skill development for successful participation in TIG were reflected in the teaching approaches they used. With the exception of Lisa, all of the teachers isolated a specific technique from the context of the game, before giving pupils the opportunity to apply the technique, usually in a small-sided or conditioned game. They gave specific instructions to explain how to execute the skills and provided the pupils with demonstrations to show them how to execute the skills. With the exception of Alastair and Margaret who handed over some responsibility to the pupils for their own learning, most of the teachers adopted a very direct role where they were in control of what was being learned and how it was being learned.

These skill-focused, teacher-led approaches reflect a very 'traditional' approach to game teaching. Research into the use of Mosston's teaching styles (Mosston & Ashworth, 2002) within PE has found that teacher-directed approaches, or reproductive styles, dominated teachers' practice because they perceive the more productive styles to be a threat to pupil control (Cothran et al., 2005) and also because reproductive styles have been shown to be effective in developing motor skills (Cothran et al., 2005; Curtner-Smith, 1999). However, one of the problems with adopting a 'teacher-directed', 'skills first' approach is that it does not provide pupils with the responsibility, or the opportunity, to develop *their* understanding of the game environment or to explore the different ways in which *they* can execute the game skills.

5.5.2: Teaching the Game

Most of the teachers in this study believed that providing pupils with authentic games experience was important in developing overall game performance, yet this was not always reflected in the way they designed their practices or the amount of time they devoted to game play during the lesson. Many of the practices did not provide a context for the skills that were being developed. When Lisa and Margaret did provide practices that more closely reflected the demands of the game, the focus was not on developing game understanding, or a link between their movements and environmental events, it was on the development of game techniques. Also, when the teachers organised the games, with the exception of Alastair, their main concern seemed to be about the pupils' ability to execute the skills during the game. Alastair,

however, encouraged the pupils to consider their decision-making options during the game.

Game playing opportunities are important when teaching TIG, not just because they encourage pupils to move and apply skills within the context of the game, but also because they facilitate the development of pupils' understanding of rules, structures and tactics. This understanding is important because it is said to have a positive effect on players' decision-making abilities (Williams & Davids, 1995). However, the development of game knowledge may not happen simply by playing the game. Providing pupils with more game playing opportunities should also involve the application of teaching strategies that encourage the explicit development of game knowledge and decision-making skills.

Teaching Games for Understanding (Bunker & Thorpe, 1982) and the Tactical approach (Griffin et al., 1997) are alternative approaches to the traditional 'skills first' approach that aim to develop players' technical and tactical performance explicitly through the game, or simplified 'game-like' situations. With such approaches, the teacher has a less direct role in the learning process and pupils are given more responsibility for their own learning where they actively engage in problem solving and divergent thinking. They are encouraged to use their prior knowledge and experiences to make links between content so that they can begin to construct and create 'new' knowledge and thus develop their decision-making skills within meaningful contexts (Kirk & MacPhail, 2002; Oslin & Mitchell, 2006). Chow et al. (2007) refer to constraints theory to explain how game-based approaches

impact on pupil performance. By manipulating key task constraints, teachers can guide pupils towards a range of appropriate action solutions to a tactical problem. Through attempting to satisfy the constraints manipulated by the PE teacher, goal directed behaviour emerges without the need to provide explicit and prescriptive instructions and learners gradually acquire the decision-making skills necessary to solve tactical problems.

Thus, in order to facilitate the development of game performance, teachers require an understanding of the skills required to play games, the types of environments that promote the emergence of such skills and the bodies of tactical/strategic knowledge that shape the game environment and promote effective decision-making. Additionally, they should understand the theories of learning that underpin effective teaching and learning in TIG and be aware of the alternative teaching approaches that aim to promote effective learning in TIG, for example, Teaching Games for Understanding (Bunker & Thorpe, 1982) and the Tactical approach (Griffin et al., 1997).

5.5.3: Involvement

All of the teachers highlighted that one of their main aims when teaching TIG was to make sure that all of their pupils are involved in the lesson and the game. Although, maximum involvement was not always achieved in terms of time on task or in the game, often as a result of lack of space in the primary schools, the teachers did try to ensure that all of the pupils were engaged once they were on task. They had a number of strategies they used to achieve this, some of which included providing the

pupils with a ball each during the warm-up/introductory activities, making the activity/task easier for the whole class, asking the more able pupils to help the less able pupils and organising mixed ability groupings. However, previous research that has investigated the concepts of challenge and ability grouping (Jackson & Csikszentmihalyi, 1999; Slavin, 1987; Walls, 2006) suggests that for effective learning to take place, the task should be set at a level that is optimally challenging to the individual. Homogenous grouping, therefore, may be more beneficial in some instances during TIG lessons because it allows the teacher to set tasks appropriate to the learners' ability level. Furthermore, research has shown that some children enjoy working with peers of similar ability more than with more able peers (Walls, 2006).

Another strategy employed, particularly by the primary school PE teachers, was to condition the game so that the teacher dictated who passed the ball in from a restart/sideline ball, or so that the more able performers had to pass to the less able performers. This, they believed, encouraged the less able performers to be more involved. However, there are some negative effects of employing such strategies. For example, by nominating the weaker players to take the restart/sideline balls, the teacher is publicly displaying the pupils who she/he thinks are less competent. By encouraging the more able players to pass to the less able players, the teacher is asking the more able players to make, potentially, the wrong decision for that moment during the game. Additionally, in adopting these strategies (and a 'skills-first' approach), the teacher is making the assumption that game performance is predominantly about the player with the ball. Most of the time a player spends on the pitch or the court is spent off the ball. Pupils need to be aware of this and understand

that their role in the game when they don't have the ball is just as important as when they do have the ball. This is perhaps a concept that Lisa could have introduced in attempting to involve all of the pupils in the 4v4 games at the end of her lesson. Instead, her strategy to increase involvement was to reinforce on-the-ball skills at the start of the lesson.

5.6: Conclusion

The teachers in this study valued the traditional curriculum in which they taught and believed that TIG play a very important role within this curriculum. They discussed their beliefs about PE curricula in terms of health and enjoyment, and believed that TIG could contribute to their curricula through the development of skills such as problem solving, communicating and co-operating, although surprisingly, none of the teachers discussed the aims of PE or TIG in terms of improving performance. However, this notion was not reflected in their beliefs about teaching TIG. Their views about the role of PE and TIG were broad, but their beliefs about teaching TIG were rather narrow, associated explicitly and almost exclusively with the development of the pupils' performance of motor skills. However, it is important to note that this research was limited to one PE department and only one lesson from each teacher was observed. Future research should be carried out to investigate the beliefs and practices of a wider range of teachers from different backgrounds and with different experiences. Additionally, future research should consider analysing teachers' practice over a longer period of time in order to carry out a more in-depth analysis and obtain a richer more accurate account of their beliefs about teaching.

Nevertheless, the results from this investigation indicated that the teachers predominantly used teacher-directed strategies to focus on the development of 'on-the-ball' technique before the introduction of the game. In order to develop playing ability in TIG, children have to develop a range of complex motor and cognitive skills both on and off-the-ball within a highly dynamic and authentic context. Alternative approaches to teaching TIG that aim to develop these skills have been developed (Bunker & Thorpe, 1982; Cote & Hay, 2002; Griffin et al., 1997; Launder, 2001) yet there was no evidence that the teachers in this study were applying such approaches. Future research, therefore, should attempt to introduce alternative approaches to teaching TIG in Scottish schools in order to increase teachers' awareness and understanding of such approaches. This may also demonstrate that game-based teaching approaches have the potential to improve pupils' TIG competence and enjoyment, ultimately encouraging them to create a positive attitude toward PE and TIG.

Chapter 6: Developing Competence in Team Invasion Games

6.1: Introduction

One of the means by which teachers in Scottish schools can attempt to encourage increased, and prolonged, participation in physical activity is to focus on developing pupil competence in activities such as soccer and basketball. Pupil competence and perception of competence have been identified as key mediators of intrinsic motivation (Deci & Ryan, 2000; Papaioannou et al., 2006). Traditionally, TIG have been taught using a teacher-centred, skill-focused approach, as evidenced in chapter 5. The aim of this approach is to provide pupils with the opportunity to develop and refine skills outwith the context of the game before they attempt to apply them in the game. The skills are usually practiced in a 'drill' format so that the pupils can focus on key technical components of the skill in order to replicate a model performance provided to them by the teacher (Williams & Hodges, 2005). The teacher facilitates this process by providing the pupils with feedback linked to predetermined technical components of the skill. One of the problems with this traditional approach to TIG teaching is that the focus of learning is on how the individual performs on-the-ball skills. The majority of a player's performance in TIG takes place off-the-ball and involves execution of fundamental and specific movement skills as well as tactical decisions (Blomqvist et al., 2005). Blomqvist et al. (2005) suggest that if teachers ignore pupils' off-the-ball performance, then they will not fully develop their competence in TIG. Another problem with this skill-based, teacher-led approach is that when the skills are presented in isolation from the game context, pupils do not develop an understanding of the situations during the game that necessitate the application of such skills, in other words, they do not develop decision-making skills.

The decisions that have to be made about the most appropriate skill to execute and how to execute it are cognitive in nature. They are based on the players' knowledge of the game, its objectives, principles and the tactics associated with the game and the team (Vaeyens et al., 2007; Williams & Davids, 1995). This type of knowledge is referred to as declarative knowledge. Acquiring declarative knowledge enables players' to make conceptual links between the tactical problems they are faced with in games and the possible ways of solving these tactical problems. As players' accumulate more game playing experience, declarative knowledge is both strengthened and operationalised so that it can be applied more efficiently to the problem at hand. This operationalised knowledge is referred to as procedural knowledge and is applied directly to the situation. This reduces the processing demands placed on the performer thus increasing the efficiency of performance.

Teachers can facilitate the development of procedural knowledge by encouraging children to apply skills such as critical thinking, problem solving, reflecting, observing and discussing. From a TIG perspective, these skills are reflective of teaching approaches such as Teaching Games for Understanding (TGfU) (Bunker &Thorpe, 1982) and the Tactical approach (Griffin et al., 1997). The aim of these methods of teaching is to develop game understanding through tactical awareness and game appreciation. Research that has investigated TGfU and the Tactical approach has found that learners developed better tactical knowledge and decision-making as well as increased enjoyment and intrinsic motivation when compared to more traditional skill-based approaches (Allison & Thorpe, 1997; Jones & Farrow, 1999; Rovegno et al., 2001; Turner & Martinek, 1999). However, research that has

investigated the effects of tactical approaches to game teaching on player competence has provided some rather equivocal results. This is partly because of the artificial and inauthentic teaching methods that have been investigated (Chow et al., 2007), for example, teaching only techniques then tactics or only tactics then techniques (McMorris, 1998).

Consequently, the purpose of this study was to investigate the effects of a game-based approach on the knowledge, perception of decision-making ability and game play (successful decision-making on and off-the-ball) of secondary 1 pupils (S1; ages 12-13) from the Scottish state secondary school involved in chapters 4 and 5. Importantly, this study was not a comparison between a technique-first and a tactics-first approach, nor was it a comparison between 'good' teaching and 'bad' teaching (McMorris, 1998). This study examined the effects of providing pupils with opportunities to explore and understand authentic game contexts compared to traditional teaching in a Scottish secondary school.

6.2: Methods

Due to the complex nature of performance in TIG a multiple methods approach was used to gather data. Mandigo and Holt (2004) highlight the complexity of games performance, stating that players should possess knowledge and understanding that enables them to anticipate patterns of play and have both the tactical and technical skills to deploy on and off-the-ball within a highly complex and dynamic environment. Consequently, verbal data from focus group interviews were gathered in order to elicit pupils' knowledge and experiences of TIG and learning to play TIG. A questionnaire was administered in order to determine the pupils' perception of

their own decision-making abilities both on and off-the-ball. Finally, actual game performance was analysed to determine any differences in game playing performance between classes as a result of participating in a five-week block of basketball.

6.2.1: Participants

Fifty-two pupils (24 female; 28 male; age = 12.5 $\pm$ 0.3yrs) participated in this study. The pupils in this study were made up of two secondary 1 (S1) classes from the same Scottish urban state secondary school as those pupils in chapter 3. Both classes were heterogeneous in terms of gender and ability and the pupils from each class had similar pre-secondary school PE experiences. Twenty seven pupils took part in the 'game-based' lessons (11 female; 16 male; age = 12.5 $\pm$ 0.3yrs) and twenty five pupils took part in the 'skill-focused' lessons (12 female; 13 male; age =12.5 $\pm$ 0.2yrs). All of the pupils in this study completed a modified version of the Tactical Skills Inventory (Elferink-Gemser et al., 2004) and a stratified random sample (Cohen et al., 2000) of eight pupils from the two classes (8 female; 8 male) took part in focus group interviews. The same samples were also recorded on video playing 4v4 basketball games.

Two teachers, Lisa and Anthony took part in this study. Both Lisa (age=23yrs) and Anthony (age=27yrs) had taught in the school for one year. This was Lisa's second year and Anthony's first year teaching as qualified teachers. Both teachers had a background in coaching and playing soccer and attended the same Edinburgh based Initial Teacher Education Institution.

6.2.2: Focus Group Interviews

The aim of the focus group interviews was to encourage the pupils to discuss their experiences when learning to play basketball during PE lessons and their knowledge about the game of basketball (Appendix 6). Focus groups were used because they are particularly useful for exploring young people's knowledge and experiences. They can be used to examine not only what young people think, but also how they think and why they think that way (Kitzinger, 1995). The questions posed to the pupils during the pre-intervention focus group interviews encouraged them to discuss their experiences of learning to play basketball when they were in primary 7 (aged between 10 and 11). The post-intervention focus group interviews encouraged the pupils to discuss their learning experiences during the five-week block of basketball. Probes were used where necessary in order to seek elaboration and/or clarification on key issues raised by the pupils (Finn et al., 2000) and to ensure that all of the pupils contributed to the discussion. Additionally, at the end of each question, the pupils' comments were summarised to check for understanding and accuracy and notes were taken to highlight the key issues raised by the pupils.

In total, four separate focus group interviews were conducted, two with the sample from the game-based group (n=8) and two with the skill-focused group (n=8) before and after the five-week block of basketball. All of the interviews took place in a classroom free from distraction and the duration of each focus group interview was approximately 20 minutes. The classrooms were set up so that the pupils sat in a semi-circle and desks were removed in order to create a less formal environment. All interviews were recorded using an audiocassette recorder and transcribed verbatim.

6.2.3: The Tactical Skills Inventory

In order to gather information about any changes in the pupils' tactical knowledge, the pupils had to complete a modified questionnaire both before and after the block of basketball (Appendix 7). The modified questionnaire derived from the Tactical Skills Inventory for Sport (Elferink-Gemser et al., 2004). This is a self-reporting inventory designed to measure an individual's perception of his/her ability to perform the right action at the right time during a TIG (tactical skills). The questionnaire was modified to relate to the game of basketball and was organised using a structured alternative format (Harter, 1982).

Knowing what to do when your team has the ball.

Really true for me	Sort of true for me			Sort of true for me	Really true for me
	✓	I always know exactly when to pass to a team mate and when not to	Or	I almost never know exactly when to pass to a team mate and when not to	

The purpose of the Tactical Skills Inventory was explained to the pupils and they were given five minutes to read the questionnaire instructions. They were reminded that the information they disclosed would be confidential and anonymous, and they were encouraged to be as honest as possible. All pupils were given as much time as they needed to complete the questionnaire and were supported whenever they required assistance. It took approximately 10 minutes for the pupils to complete the questionnaires.

6.2.4: 4V4 Games Analysis

In order to ascertain whether or not the pupils' playing performance had been influenced as a result of the basketball lessons, eight pupils from each class were recorded on video playing a ten-minute 4v4 basketball game, both the week before and the week after the basketball block. The teams consisted of the same pupils from the focus group interviews. The players in each team were the same for both games and each team played against the same opposition. The only exception to this was the post block game for the game-based group. On the day of filming, one of the boys from the sample was absent and as a result, another boy from the same class took his place.

6.2.5: Game-Based Approach

Lisa taught a five-week block of basketball based on the Tactical approach to teaching games (Griffin et al., 1997) and on a dynamical systems perspective of motor learning (Hanford et al., 1997; Williams & Hodges, 2005) (Appendix 8). The Tactical approach to teaching TIG emphasises tactical understanding and the development of motor skills as a means of solving tactical problems. The teacher decides on the tactical problem that has to be addressed and a game (conditioned to highlight a specific tactical problem) is presented to the learners. Once the learners understand the problem, and have worked out the skills required to solve the problem, they have the opportunity to explore and examine the skills in more detail before returning to the game. In terms of skill development, ideas based on dynamical systems theory were applied. From this perspective, performers are given the opportunity to explore this workspace and search for the most appropriate

movements that fulfil the demands of the task. The teacher adopts a much more 'hands-off' approach by manipulating key task constraints, guiding pupils towards a range of appropriate action solutions to a tactical problem. Through attempting to satisfy the constraints manipulated by the PE teacher, goal directed behaviour emerges without the need to provide explicit and prescriptive instructions. Learners gradually acquire the skills necessary to solve tactical problems.

Lisa had some previous experience of teaching in this way as an undergraduate PE student, where she completed an eleven-hour module that focused on game-based approaches to teaching games. However, the findings from chapter 5 indicated that Lisa focused more on the development of skills when she taught TIG and less on pupils' tactical understanding. Consequently, she was guided through the planning stage of each lesson by the lead researcher who had seven years experience teaching and researching game-based approaches to games teaching. The overall aim of the five-week course was to develop the pupils' performance in a game of 4v4 basketball. More specifically, the aim was to develop the pupils' ability to create space for themselves and/or the ball carrier in order to move towards the target and score. Thus, the tactical elements Lisa focused on were: creating space on and off-the-ball to keep possession and to reach the target, re-gaining possession and counter attack, and denying space in the key area.

6.2.6: Skill-Focused Approach

This group was taught by Anthony, who delivered a five-week block of basketball that followed the PE department's programme for teaching basketball (Appendix 9).

His overall aim was the same as Lisa's, namely, to develop the pupils' performance in 4v4 games. Anthony intended to achieve this aim by teaching the chest pass, the bounce pass, dribbling, the set shot, the jump shot and the lay-up. Anthony was not guided in any way by the researcher. His objective was to use his own knowledge and beliefs about teaching to deliver the programme set out by the PE department.

Both the 'game-based' lessons and the 'skill-focused' lessons took place once a week and lasted one hour and twenty minutes. The time available for on-task activity was reduced to approximately 60 minutes to allow time for changing and administrative duties. The S1 basketball blocks took place during the term from January to March.

6.3: Data Analysis and Results

6.3.1: Focus Group Interviews

The first stage of analysis involved reading and re-reading the transcripts in order to become familiar with the pupils' responses. The second phase of the analysis involved the identification of key experiences or bodies of knowledge about basketball that the pupils in each group discussed. Reference to the field notes that were taken during the interviews supported this process. The third phase of this analysis involved the independent identification of the pupils' experiences and knowledge by a second researcher. Finally, the researchers discussed their findings in order to come to a consensus about their interpretation of the pupils' responses and to ensure that all of the key issues had been identified from the transcripts.

Skill-Focused Group: Pre-Intervention

When asked to discuss the things they knew about the game of basketball, or the things they remembered from their previous basketball experiences, the main areas of discussion were the game skills, the practices they took part in to develop game skills and the rules of the game:

> In primary school, I played with my friend and we would be doing dribbling in lessons. We were going up and down and around corners and things like that. (Female pupil 1)
>
> We did shooting practice at the basketball net and we all had different positions. I remember shooting from different angles. (Male pupil 1)
>
> If you're dribbling the ball and you hold it in your hand, both hands and you start dribbling again, that's a double dribble. (Male pupil 4)
>
> It's (travelling) sort of like running and you can't run holding the ball. You have to dribble it but you can only dribble it in certain ways but we weren't taught much more about that. (Male pupil 3)

One pupil remembered playing a conditioned game that aimed to develop their ability to beat the defence to score:

> It was like five and five but it was more diamond shaped so you passed to one person before you could make the other person move sort of game. It was trying to get three people as a defence for one net and you had to get your diamond past those three people to score. (Male pupil 3)

Another pupil remembered playing in a mini tournament and described it in terms of how the tournament was organised:

> I remember we used to get split into four teams and there used to be different colours for each team. We used to play two games and then the winner would play another team. (Female pupil 2)

Skill-Focused Group: Post-Intervention

The focus of the pupils' discussion about what they had learned, or what they remembered, from the five-week block of basketball was very similar to the discussion they had during the pre-intervention focus group interview. They mainly discussed how they had learned the skills of the game of basketball, although some of the pupils did place these skills within a tactical context, for example:

> We learned different types of baskets that you could score, like lay-up and we learned what to do when you are dribbling, so a defender can't take your ball away. (Female pupil 1)
>
> Move around and stuff, so that we could be in a better position to score goals. (Female pupil 2)
>
> We have learned different skills, like how to dribble, how to shoot, and all the things you need to know more or less to play a simple game of basketball. (Male pupil 1)

One of the pupils talked about attacking and defending, but did so in a rather vague and confused way:

> Well we learned like advanced techniques as well, we learned how to defend rather than just always attacking. So we learned opposite as well as normally... Well like if an attacker was coming up on the left, that if there was a person next to them you can pass... like you have to mark one of them and if you have got another person to mark them but also to keep close to the hoop. (Male pupil 3)

There was also some mention of the rules that they learned during the five-week block:

> We learned some of the rules and simple rules, like double dribble, some signals as well, and we also learned another rule which was like its non contact sport so you can't hit them, you can only like hit the ball out their hand if they have got one hand on the ball. (Male pupil 1)

Game-Based Group: Pre-Intervention

Like the skill-focused group, the game-based group mainly discussed skills and rules when asked to recall the things they learned, or remembered, from their previous basketball experiences in primary school:

> Different ways of throwing it and passing and shooting, like the chest pass and the bounce pass. (Male pupil 3)
>
> I remember that there are tons and tons and tons of rules like double dribble and travelling. Travelling is when you can't pick up the ball and bolt with it. Double dribble is when you dribble, stop and dribble again. (Male pupil 1)
>
> You're not allowed physical contact and if the ball hits the wall, it's your opponents. (Male pupil 2)
>
> You're not allowed to run with the ball in your hand, you've got to bounce it or dribble it. (Female pupil 2)

Game-Based Group: Post-Intervention

When asked to discuss the things that they had learned, or remembered from the five-week block of basketball, the game-based group's response was quite different from their pre-intervention discussion and from the discussions held by the skill-focused group. The main areas of discussion were related to the principles of play that they had learned during the course. They highlighted the counter attack, zone defence, width and possession, as well as some basic skills and rules. For example, two pupils described zone defence in terms of:

> Well we get formation and then stop the other team getting near a basket cause they get a better shot percentage from right under the basket. (Male pupil 3)

> you dinnae want them to win, so to avoid them from winning you zone under the basket so they cant score kind of thing. (Male pupil 1)

Two of the pupils also described how to penetrate a team's zone defence:

> Pass it to your wide players and just keep possession of the ball as long as you can...The other team start coming out of their zone, and then someone runs into their zone and then shoots. (Male pupils 3)

> It gives you more space and it gives you time for other people to make a run. (Female pupil 1)

One of the girls in this group described, in a rather vague way, some of the basic rules she had learned:

> Well the thing that we learned is how to like play, like the rules of the basketball and it's like what to do...What to do and to learn what you can do... Just basic stuff like the ball goes out it's the other teams ball, and stuff like that. (Female pupil 2)

6.3.2: The Tactical Skills Inventory

The purpose of the Tactical Skills Inventory was to gather information about the pupils' perception of their tactical skills (tactical knowledge) in basketball (Elferink-Gemser et al., 2004). A mixed design two-way repeated measures ANOVA was used to test for differences between the game-based and skill-focused groups in the dependent variable of tactical knowledge. Results reveal a significant interaction effect between groups (skill-focused versus game-based) in tactical knowledge (Wilks's Lambda = .88, $F(1,50) = 6.61$, $p = .01$, eta sq = .11, observed power = .71). A lower score indicates a greater perception of tactical knowledge, therefore differences in the pre-post intervention means (Table 6.1) revealed that the game-based group believed that they had greater tactical knowledge as a result of the intervention programme.

Table 6.1: Means (standard deviation) for tactical knowledge pre and post intervention.

	Pre-Intervention		Post-Intervention	
Pupils' Responses	**Skill-Focused (n25)**	**Game-Based (n27)**	**Skill-Focused (n25)**	**Game-Based (n27)**
Tactical Knowledge	2.26 (0.40)	2.30 (0.49)	2.30 (0.41)	2.04 (0.55)**

**p<0.01

6.3.3: 4v4 Games Analysis

In order to assess the participants' game performance in offence both on and off-the-ball, a modified coding procedure initially developed by Blomqvist et al. (2005) was applied. This coding procedure was developed in order to evaluate students' game performance (decision-making and skill execution) in soccer. For the purpose of this study, the coding categories were modified to reflect good or poor decisions on and off-the-ball in the game of basketball (Table 6.2). The first part of the coding process involved dividing the games into decision-making units (DMU). Each DMU began when the player had control of the ball and ended when the ball reached its target, was intercepted or went out of bounds. This was carried out using Game Breaker software (www.sportecinternational.com) that was set up to include two seconds of play leading into and following each DMU, thus providing some context for the analysis. Game Breaker was a useful tool for analysing the data because each DMU could be played back at various speeds and in different orders so that comparisons could be made between any two or more DMUs. All of the pupils' tactical decisions during each DMU were judged as 'good' or 'poor' according to the relevant coding

category. Additionally, on-the-ball skill execution during each DMU was coded as either 'successful' or 'unsuccessful' (Table 6.3).

Table 6.2: Modified coding categories for decision-making (Blomqvist et al., 2005)

Decision	1=good	0=poor
On-the-ball	Pass to a team mate who is open. Holding the ball (no team mate open). Moving with the ball towards the target/appropriate space (according to the flow of the game/no team mate open). Good scoring attempt.	Pass to a covered team mate. Pass to a team mate too close or too far. Holding on to the ball (passing or shooting more appropriate). Moving with the ball (passing or shooting more appropriate/away from target or support resulting in isolation). Blocked shot or inappropriate distance.
Off-the-ball	Movement required by the flow of the game. No movement needed (already in space). Moving into a position to receive a pass (appropriate distance)	Inappropriate movement as required by the flow of the game. No movement when needed (standing covered, no purpose). Poor movement (too close, far or crowded, next to another team mate).
No decision	Situation happens too fast for player to react.	

Table 6.3: Modified coding categories for skill execution (Blomqvist et al., 2005)

Action	1=successful	0=unsuccessful
Passing	Own team mate maintains possession of the ball.	Opponent gains possession of the ball or the ball goes out of bounds.
Dribbling	Player maintains possession of the ball. Does not double dribble.	Player loses the ball when dribbling or the ball goes out of bounds.
Shot	Basket.	No basket.

6.3.3.1: Reliability.

Two researchers were involved in the coding process and both had previous experience of analysing S1 pupils' basketball performances. The two researchers watched the games on tape and discussed the coding categories devised by Blomqvist et al. (2005) until they agreed on the interpretation of each category in relation to the game of basketball. The games were then divided into DMUs and together both researchers coded a sample of play for one of the teams in each game, both pre and post intervention, for the first 12 DMUs (20% of all DMUs). The next day, the main researcher re-coded the same sample.

Consistent with the procedures adopted by Blomqvist et al. (2005), a percent agreement reliability test was used (number of agreements/number of agreements + number of disagreements). For the skill-focused team that was coded then re-coded, the agreement for decision-making was 94% both pre and post intervention. The agreement for the game-based teams pre intervention was 92% and 94% post intervention. Following this procedure, the main researcher coded all of the DMUs for each game. Finally, one week after all of the game had been coded, the second researcher returned to re-code the first 12 DMUs for the same teams both pre and post intervention. For both teams, this resulted in 94% agreement for the pre intervention game and 92% for the post intervention game. For all of the games that were coded and re-coded, inter observer agreement was 100% for the on-the-ball skill executions carried out within each DMU.

6.3.3.2: Statistical analysis.

Pre-post performance for each group was compared by repeated measures ANOVA. Where appropriate post hoc pupil t-tests (paired test for within group differences and independent test for between groups) with the Bonferroni correction factor were used. Effect sizes for the ANOVAs were calculated using the η^2 method and for t-tests by Cohen's d. Sphericity was measured by Mauchly's test and where appropriate the Huyn-Feldt Epsilon correction factor applied.

There were no significant differences between groups for decision-making on and off-the-ball pre-intervention (Table 6.4). For the on-the-ball 'good' DMU dependent variable there were significant differences ($F(1,14) = 5.09$, $p < 0.05$, $\eta^2 = 0.27$) post intervention, with the game-based group making better decisions (Table 6.5). For good support (off-the-ball 'good') there were no significant differences between groups in the pre-test but the game-based group performed significantly better in the post–test ($t(14) = 8.23$, $p < 0.001$, $d = 4.12$) (Table 6.5). The game-based group also demonstrated a significant pre-post difference ($t(7)$ 5.74, $p < 0.001$, $d = 2.85$) for good support (off-the-ball 'good'). Application of the Bonferroni correction factor meant that the probability for significance in the post hoc pupil t-tests would be 0.013. There were no significant differences pre-post for the skill-focused group for good support.

Table 6.4: Mean (±SD) decision-making on and off-the-ball pre-intervention.

	On-the-ball 'good'	**On-the-ball 'poor'**	**Off-the-ball 'good'**	**Off-the-ball 'poor'**
Skill-Focused	8.62 (3.62)	6.25 (4.83)	21.75 (6.9)	21 (9.56)
Game-Based	11.62 (5.53)	5 (4.56)	24.12 (5.08)	22 (14.15)

Table 6.5: Mean (±SD) decision-making on and off-the-ball post-intervention.

	On-the-ball 'good'	**On-the-ball 'poor'**	**Off-the-ball 'good'**	**Off-the-ball 'poor'**
Skill-Focused	9.25 (6.71)	3.75 (3.54)	17.87 (4.85)	20.37 (11.96)
Game-Based	17 (7.03)*	3.28 (2.12)	39.12 (5.46)***	19.5 (6.35)

*p<0.05 and ***p<0.001

There were no significant differences either between or within groups for skill execution pre to post intervention. However, the game-based group increased their successful skill execution by 38%, compared to only 10% of an increase for the skill-focused group (Table 6.6).

Table 6.6: Mean (±SD) skill execution pre and post-intervention.

	Pre Intervention		**Post Intervention**	
	Successful	**Unsuccessful**	**Successful**	**Unsuccessful**
Skill-Focused	10.0 (7.48)	9.25 (6.27)	11.0 (10.3)	4.75 (4.24)
Game-Based	13.75 (7.92)	8.12 (6.38)	19.0 (10.68)	6.62 (4.14)

6.4: Discussion

Team invasion games play a principle role within the Scottish PE curriculum. Additionally, developing pupil competence in TIG can equip pupils with skills and abilities that facilitate continued participation in physical activity into adulthood (Mandigo & Holt, 2004). One of the key factors of engagement and continued participation in TIG is intrinsic motivation. This is enhanced when learners experience feelings of competence within a particular domain (Deci & Ryan, 2000; Papaionnou et al., 2006). Developing pupil competence in TIG, therefore, must be one of the main aims of PE teachers in Scottish schools. Consequently, the purpose of this investigation was to analyse the effects two teaching approaches had on S1 pupils' basketball performance in a Scottish urban state secondary school.

6.4.1: Game Knowledge

We found no differences between the two classes in terms of the ways in which they verbally articulated their knowledge about the game of basketball before the five-week block. However, when asked to discuss what they had learned (or what they knew) about the game of basketball after each block, the topics of discussion were quite different for each group. The group that took part in the skill-focused lessons discussed the technical components of basketball skills and made very few references to the tactical contexts in which the skills are applied. In contrast, the pupils from the game-based lessons discussed the different principles of play that they applied during practices and games that enabled them, and their team, to reach their intended goals. On the surface, these results are rather surprising in light of the fact that both teachers had the same overall aim for the five-week block, namely, to develop the

pupils' game playing performance in 4v4 basketball. However, both the content that was delivered by each teacher and the means of delivery by each teacher were quite different, and these factors seem to have influenced the type of knowledge the pupils from each group acquired. In some ways, these results reflect comments made by McMorris (1998) regarding previous 'skills versus tactics' literature, that teaching tactics leads to better tactical understanding and teaching techniques leads to improvements in technique. Importantly, the teaching in this investigation was not skills only compared to tactics only, nor was it good teaching compared to poor teaching (McMorris, 1998). The skill-focused group spent a large part of their time learning about skills and learning to perform skills, but they were also presented some opportunities (although relatively limited) to play games at different stages of each lesson, especially in the last lesson.

However, these game opportunities do not appear to have made an impact on the pupils' knowledge of the game beyond the execution of basketball skills. This may be because the expedient development of decision-making behaviours is facilitated by at least some teacher input rather than no teacher input (Smeeton et al., 2005). The pupils in the game-based lessons were explicitly engaged in problem-solving activities, during which they were guided by the teacher towards tactical solutions to tactical problems. As a result, they developed a more sophisticated understanding of the game and the principles of play that shape the game, knowledge that is declarative in nature. It appears, therefore, that when learners are actively encouraged to interpret, observe, discuss and actively explore the game environment, declarative knowledge may be enhanced.

Supporting this premise, Wright and Forrest (2007) highlight that pupils should develop language in TGfU lessons that enables them to talk about rules, principles and tactics. However, the development of this language is based on the opportunities pupils have to answer open questions and debate their ideas (Kirk & MacPhail, 2002). In a study that investigated the teaching processes involved when applying TGfU, Wright and Forrest (2007) found that teachers tended to pose closed questions that only required one answer. The authors highlighted that this type of questioning does not encourage the pupils to engage in problem solving activities or in 'debate of ideas' (Kirk & MacPhail, 2002). In the present study, the pupils in the game-based class appear to have developed their games language because Lisa provided them with opportunities to debate their ideas. She posed questions, or problems, to which there were a number of solutions. Importantly, the pupils had to work to find the solutions to the problem as a team by discussing the game and playing the game. They also had to articulate their responses, both verbally and physically, in order to demonstrate their understanding to the teacher. This link between 'debate of ideas' and practically engaging in the task is essential because declarative knowledge is enhanced through games play which results in the development of procedural knowledge and decision-making skills.

6.4.2: Decision-Making

Since there is a relationship between declarative knowledge and decision-making (Blomqvist et al., 2005; Williams & Davids, 1995) the knowledge acquired by the game-based groups may have positively influenced their ability to make appropriate decisions both on and off-the-ball during games play. Blomqvist et al. (2005) found

that those students with more sophisticated knowledge representations about the tactical principles in soccer were also better decision-makers in games play situations. In the present study, the pupils in the game-based group believed that their decision-making abilities both on and off-the-ball had improved as evidenced by their increased scores from the Tactical Skills Inventory (Table 6.1). In contrast, the skill-focused class believed that their decision-making abilities had deteriorated over the five-week period. This may be because the skill-focused class were given fewer opportunities to play the game or take part in modified games. Additionally, the pupils in the skill-focused class were not given the same opportunities as the game-based group to discuss the game in terms of player positions, movements, roles, responsibilities and principles of play or tactics, thus hindering the development of basketball specific declarative knowledge. Moreover, Anthony predominantly taught on-the-ball skills yet the majority of the items in Tactical Skills Inventory are related to situations that occur off-the-ball.

Blomqvist et al. (2005) suggested that if game performance is to be improved, then decision-making has to be taught explicitly, particularly decision-making *off-the-ball* because the majority of a player's time is spent off-the-ball. Additionally, a player's effectiveness off-the-ball ultimately impacts on overall game performance and involvement, which has implications not only for improvement but also for important affective factors such as perception of competence, enjoyment and motivation (Papaionnou et al., 2006).

6.4.3: Game Performance

The 4v4 game performance data show that the game-based group made significantly more good decisions on ($p<0.05$) and off-the-ball ($p<0.001$) compared to the skill-focused group. These results also highlight, once again, the importance of decision-making off-the-ball since the most significant difference between the groups' performance was in their decision-making off-the-ball. This finding has extremely important implications for teaching, learning and assessing TIG within PE. Firstly, this evidence lends support to the suggestion that pupils' overall game performance may be enhanced if teachers facilitate the development of pupil knowledge of, and performance in, situations and decisions that occur off-the-ball. Secondly, it suggests that pupils need to be made more aware of their performance off-the-ball and the contributions that they can make to the game off-the-ball. This may encourage pupils to distribute the ball more equally (and appropriately) during game play, which could have a positive influence on pupils' involvement in the game, especially in classes of mixed ability. Such awareness should also impact positively on the pupils' perception of competence in TIG as well as other affective factors such as enjoyment and motivation. Finally, teachers should be aware that when they assess their pupils' performance in games, they ought to take into account what their pupils are doing when they do not have the ball. Assessing changes in performance both on and off-the-ball throughout a games block will give a much more accurate account of any improvements made by the pupils and may also highlight improvements in performance for those pupils who are less able at executing on-the-ball skills during the game.

In this investigation there were no significant differences between groups post intervention in terms of on-the-ball skill execution. This is possibly as a result of the relatively short block of basketball experienced by the pupils and because cognitive components of game performance are more easily affected by teacher intervention than skill components of game performance (French & Thomas, 1987). This finding may also be explained by the fact that the pupils throwing, catching and dribbling skills were already developed to a level that would make any changes in performance difficult to detect. Nevertheless, the mean scores did indicate a trend towards an increase in 'successful' skill execution and a decrease in 'unsuccessful' skill execution post intervention for both groups. Importantly, when these results are considered together with the game-based group's significant improvements in decision-making on-the-ball post-intervention, one could deduce that the game-based group's overall performance improvements were greater than the skill-focused group. This is because being able to perform game specific skills is of no value unless they are executed successfully within the context of the game and facilitate the attainment of the player's (and the team's) game objectives. From a teaching perspective, this highlights the need to focus more on the development of decision-making skills, especially since players make more tactical decisions during TIG than skill execution (Blomqvist et al., 2005) and because players can take part in TIG even with low levels of skill (Bunker & Thorpe, 1982). Unfortunately, previous research (including the findings in chapter 5 of the present thesis) has shown that the focus for teachers when teaching TIG is on developing pupil proficiency in executing game specific motor skills, often in the absence of decision-making contexts (Curtner-Smith, 1999; Curtner-Smith et al., 2001). Certainly this was observed in the

present study in relation to the approach Anthony adopted to teach a five-week block of basketball.

From a constructivist perspective, the results from the game performance analysis could be explained in terms of the role of the learner's prior knowledge and their active engagement in authentic learning environments. Game-based, pupil-centred approaches promote active engagement in problem solving and divergent thinking. This encourages pupils to use their prior knowledge and experiences to make links between content so that they can begin to construct and create 'new' knowledge, and thus develop their decision-making skills within meaningful contexts (Kirk & MacPhail, 2002; Oslin & Mitchell, 2006). However, one of the problems with interpreting the game performance results from a constructivist perspective is that it does not provide an explanation as to how functional movements are developed.

Williams and Hodges (2005) suggest that motor skills can be learned within small-sided or conditioned games because they reflect both varied and random practice, and thus higher levels of contextual interference. Hanford et al. (1997) use dynamical systems theory to propose that co-ordination patterns emerge (both within the individual and the team) as a result of constraints imposed on players and because of the interactions amongst constraints. Importantly, teachers can manipulate constraints so that appropriate movement and decision-making emerges during performance.

One of the most effective ways in which teachers can facilitate the emergence of game movements is to manipulate task constraints. Task constraints consist of things such as rules and boundaries, and are related to declarative components of game play such as game principles and tactics. An example of task manipulation is to condition a game to highlight a specific tactical problem. A conditioned game that Lisa used during one of her basketball lessons was to ask each team to work out *the quickest way* of reaching the basket to shoot after regaining possession from a defensive rebound (Appendix 8). She did this by changing the proportion of offence to defence players to create a 3v2 situation. This allowed each team to explore different ways of reaching the basket at speed to shoot (based on their own strengths and weaknesses within the team) and encouraged them to understand the principles underpinning a fast break in basketball. The appropriate manipulation of task constraints, therefore, can guide individuals towards relevant cues and movements, and encourage teams to form and recognise different patterns of play. Decision-making behaviour, therefore, emerges as a function of the individual's pattern recognition strategies (Williams et al., 2006) and his/her interpersonal coordination with other players including team-mates and defenders (Chow et al., 2006).

In explaining the emergence of decision-making from this perspective, Chow et al. (2006) described the notion of attacker-defender dyads. When attackers are faced with decisions about what to do and when to do it, the decision they make is linked to their attempts to break the symmetry that has been created by the unwelcome interpersonal system formed by the marking defender (Chow et al., 2006). Thus, when teachers provide learners with practice environments that replicate this

interpersonal coordination dyad, learners explore all of the possible ways of breaking the symmetry and, as a result, decision-making emerges.

> Understanding the need to keep key informational sources and movements coupled together could inform how TGfU proponents design educational environments to facilitate perceptual motor learning and the acquisition of decision-making skills in games. (Chow et al., 2007, p. 264)

6.5: Conclusion

The present study, along with previous research in this field (Allison &Thorpe, 1997; Jones & Farrow, 1999; Rovegno et al., 2001; Turner & Martinek, 1999), focused on measuring the outcomes of two different teaching approaches. The findings show that when a pupil-centred, game-based approach was used to teach S1 basketball, outcomes included the development of bodies of knowledge that were declarative in nature, improved perception of decision-making abilities on and off-the-ball and improved game performance in 4v4 games. Although this type of information is extremely valuable in relation to understanding the effectiveness of different teaching approaches, they should also be considered with some reserve. The 4v4 games of basketball were only recorded with the use of one video camera. Although the decisions of all of the players were captured at every stage of each match, using only one camera made it difficult to make an accurate judgement about the width and depth of each player's movements. Additionally, although there were many similarities between the two teachers involved in this study, it would be wrong to suggest that it was the way they designed and presented the tasks that was the sole influence on the pupils' learning and performance outcomes. Future research in this area could address this issue by adopting a crossover design. In this way, the two

teachers would teach a block of TIG using one of the two games teaching approaches (game-based or skill-focused). After a period of time to allow any treatment effect to wash out, the teachers would change their teaching approach to the one that they had not previously used. Any effect of retesting (or anything that happened between the tests) could then be subtracted out by an appropriate analysis (Hopkins, 2000).

However, the main aim of this study was to demonstrate the effects an alternative approach to games teaching had on pupil performance compared to the current, traditional, practice within the school. Consequently, future research could also examine the teaching and learning process involved when adopting different approaches to teaching TIG. For example, what was it about the teachers' behaviour that impacted on pupil learning when they adopted each approach to teaching TIG? Also, how did pupils react to such teaching strategies? Previous research that has examined teaching and learning processes in PE suggests that when teachers adopt pupil-centred approaches to teaching, they exhibit more mastery behaviours. For example, they set differentiated tasks and encourage pupils to set self-referenced goals for improvement (Morgan et al., 2005a). When a mastery motivational climate is created in PE, pupils report higher levels of enjoyment, perceptions of competence, intrinsic motivation and a positive attitude towards PE (Morgan et al., 2005a; Morgan & Carpenter, 2002; Morgan et al., 2006). What, therefore, is the relationship between teaching using a game-based (or skill-focused) approach and motivational climate? How does this relationship impact on the pupils' experiences in TIG lessons? Only by investigating the teaching and learning process in more detail can we begin to fully understand why game-based, pupil-centred, problem solving

approaches to games teaching seem to have a positive influence on pupil learning and performance.

Chapter 7: Teaching Team Invasion Games and Motivational Climate

7.1: Introduction

One of the main aims of PE is to provide young people with experiences, skills and knowledge that will encourage them to take part in physical activity outside of school and into adulthood (Scottish Executive, 2004a). A key construct in facilitating this kind of self-determined behaviour toward PE and physical activity is intrinsic motivation (Deci & Ryan, 2000; Papaioannou et al., 2006; Wigfield & Eccles, 2000). Young people who are intrinsically motivated to take part in PE, will apply more effort to learning tasks, find their PE experiences more enjoyable and value the subject more highly than those who are less intrinsically motivated to take part (Deci & Ryan, 2000; Li et al., 2007; Wigfield & Eccles, 2000). Individuals who have high levels of intrinsic motivation in PE are also more likely to continue to participate in physical activity after school and into adulthood (Hein et al., 2004; Morgan & Carpenter, 2002; Papaioannou et al., 2006). Although everyone is capable of being intrinsically motivated, this can be influenced either positively or negatively by the environmental conditions the individual is exposed to (Deci & Ryan, 2000). Recent research has demonstrated that a mastery motivational climate, where the teacher defines success in relation to self-referenced effort and improvement, can positively influence intrinsic motivation and promote higher levels of enjoyment, perceptions of competence, and a positive attitude towards PE (Morgan et al., 2005a; Morgan & Carpenter, 2002; Morgan et al., 2006; Ommundsen & Kvalo, 2007). In contrast, when a performance motivational climate is prevalent, with an emphasis on norm-referenced comparison, pupils reported higher levels of boredom, lack of enjoyment,

a belief that ability, not effort, leads to success and lack of interest in PE (Morgan et al., 2005a).

Based on the work of Epstein (1989), Ames (1992) identified the teacher behaviours that were more likely to promote a mastery motivational climate and placed them within structures that related to the task, authority, recognition, grouping, evaluation and time (TARGET). To facilitate the creation of a mastery motivational climate whilst adopting Ames' (1992) TARGET structures, teachers should set differentiated tasks and encourage pupils to set self-referenced goals for improvement, allow pupils to make decisions and take on leadership roles, recognise effort and improvement privately, organise co-operative heterogeneous groups, encourage pupils to self-evaluate and allow flexible time on tasks. Morgan et al. (2005b) developed a computer based observational measure of the TARGET behaviours using the Behavioural Evaluation Strategy and Taxonomy software (BEST) (Sharpe & Koperwas, 1999). This facilitates the analysis of the teaching structures that influence motivational climate and provides important and detailed information about the teaching and learning environment when different teaching approaches are adopted.

The ways in which teachers teach PE and the impact their behaviours have on the learning environment is very important in terms of understanding the factors that positively (or negatively) influence pupils' affective responses towards PE. From a Scottish perspective, it is important to understand the way teachers teach, or the type of learning environment they create, when teaching team invasion games (TIG) such

as soccer, rugby and basketball. They make up a large part of the Scottish PE curriculum and contribute significantly to the physical education of young people.

Traditionally, TIG have been taught using teacher-centred, skill-focused approaches. As evidenced from the findings in chapter 5, this approach is used in order to develop and refine specific game skills outwith the context of the game before providing pupils with opportunities to apply the skills in a game situation. The teaching behaviours adopted when using this teaching approach are reflective of the reproductive teaching styles from Mosston's Spectrum of Teaching Styles (Mosston & Ashworth, 2002). However, one of the contentions with this approach to teaching PE and TIG is that it fails to take into account the positive influence the productive teaching styles can have on pupils' affective responses and their cognitive engagement (Rink, 2001). A high level of cognitive engagement is important in learning because it increases pupils' critical thinking and problem solving skills. With regard to participating in TIG, these skills develop pupil knowledge and understanding, which can have a positive impact on overall TIG playing performance (Hopper & Kruisselbrink, 2002; Kirk & MacPhail, 2002).

The benefits derived from using pupil-centred teaching approaches (for example, guided discovery and problem solving) could also explain why research that has investigated game-based approaches to games teaching has found that they are more effective than traditional approaches in developing pupils' tactical knowledge, decision-making and game playing performance (Allison &Thorpe, 1997; Jones & Farrow, 1999; Rovegno et al., 2001; Turner & Martinek, 1999). Supporting the

findings from previous research, the results from chapter 6 demonstrated that a pupil-centred, game-based approach was more effective than a traditional skill-focused approach in the development of game knowledge, perception of decision-making ability and game performance, specifically decision-making on and off-the-ball. Developing pupils' performance in TIG is important because this can have a positive effect on pupils' perception of competence. The results from chapter 4 of the present study found a relationship between pupils' perception of competence, their enjoyment of and the amount of value they attached to TIG. Thus, the development of pupils' competence in TIG may be an important factor in determining whether or not they enjoy, and importantly value TIG, since subjective task value is a strong predictor of an individual's intention to continue to participate in an activity (Wigfield & Eccles, 2000).

It appears that there are a number of commonalities between pupil-centred teaching styles and game-based teaching approaches in PE. These are linked to the teaching strategies used, for example, problem solving, pupil decision-making and varied and interesting tasks. However, there also seems to be a relationship in terms of positive affective outcomes, such as increased perception of competence, enjoyment and value. As a consequence, an analysis of the TARGET teaching behaviours that are exhibited whilst adopting a game-based approach may indicate that such commonalities are linked to motivational climate. This could provide more detail with regard to why pupil performance seems to be enhanced when a game-based teaching approach is used.

In order to develop an even deeper understanding of the processes involved when teaching using a game-based approach, it may also be pertinent to investigate both teachers' and pupils' thoughts about their experiences during TIG lessons. Teachers are at the forefront of curriculum implementation and should have an in-depth and intimate knowledge about pedagogy and their pupils. As a consequence, accessing their thoughts about different approaches to teaching TIG may provide valuable information about the perceived effectiveness of the teaching and learning environment. It is equally important to recognise that children are not passive agents in the teaching and learning process. In order to determine what is being experienced, or learned, it is essential to access pupils' thoughts about their learning environment in PE. Listening to pupils and understanding their experiences will bring intentions and outcomes closer together, and enhance the teaching and learning process.

The main purpose of this chapter, therefore, was to investigate the factors that may have influenced the pupils' knowledge, perception of decision-making and game performance during the basketball lessons in the previous study (chapter 6). As a consequence, an investigation was carried out to determine the impact of the two teaching approaches (game-based and skill-focused) on pupils' perception of competence, enjoyment and value/importance. In addition, this study aimed to identify the teaching behaviours exhibited when teaching both a game-based approach and a skill-focused approach using the TARGET structures developed by Ames (1992). Finally, this study investigated pupils' and teachers' thoughts about both teaching approaches based on their experiences during each lesson of the five-week block.

7.2: Methods

7.2.1: Participants.

This investigation involved the same fifty-two pupils (24 female; 28 male; age = 12.5 ± 0.3yrs) from the Scottish urban state secondary school that participated in the previous chapter. This included twenty seven pupils in the 'game-based' lessons (11 female; 16 male; age = 12.5 ± 0.3yrs) and twenty five pupils in the 'skill-focused' lessons (12 female; 13 male; age =12.5 ± 0.2yrs). The week before and the week after the basketball blocks, all of the pupils in this study completed a modified questionnaire (Appendix 2) (Deci & Ryan, 2000; Fox & Corbin, 1989; Molt et al., 2001). In addition, a stratified random sample (Cohen et al., 2000) of eight pupils from each class (8 female; 8 male) took part in focus group interviews conducted immediately after each lesson (Appendix 10). Lisa delivered the game-based basketball lessons and Anthony delivered the skill-focused basketball lessons.

7.2.2: Team Invasion Games Questionnaire.

In order to gather information about the pupils' perception of competence (Fox & Corbin, 1989), enjoyment (Molt et al., 2001) and the personal value or importance they placed on basketball (Chen, 1996; Deci & Ryan, 2000; Wigfield & Eccles, 2002), the pupils completed a modified questionnaire the week before and the week after the block of basketball. The modified questionnaire used in this study was identical to the questionnaire that was administered to the pupils in chapter 4 (Appendix 2). The participants were required to read a series of contrasting statements and select those they believed represented them most accurately within the context of their basketball experiences. The purpose of the questionnaire was

explained to the pupils and five minutes was provided to read the instructions. They were reminded that the information they disclosed would be confidential and anonymous. Encouragement was given to be as honest as possible. All pupils were given as much time as necessary to complete the questionnaire and were supported by the lead researcher and the class teacher whenever they required assistance. All of the pupils completed the questionnaire (n=52). This took between ten and twenty minutes.

7.2.3: TARGET structures.

In order to analyse the teaching behaviours that influenced the motivational climate in accordance with Ames (1992) TARGET structures, both teachers were filmed during the first and the final lessons of the five-week basketball block. The camera was positioned in an area of the gym that did not interfere with the lesson. The focus of the camera was on the teacher at all times during the lesson. Each teacher wore a wireless microphone.

7.2.4: Post lesson teachers interviews.

In order to investigate their thoughts about each lesson, both of the PE teachers took part in semi-structured interviews. The aim of the interviews was to gain a greater understanding of the teaching and learning processes taking place when different approaches were applied to teach TIG (Appendix 11). The questions posed by the researcher were designed to identify the strategies the teachers used when teaching TIG and investigate their views on pupil learning. At the end of each question, the researcher summarised the teachers' comments to check for understanding and

accuracy and asked for any additional comments. This part of the process allowed the researcher to take notes that highlighted the key issues raised. The interviews lasted approximately thirty minutes and were conducted on the same day the lessons were taught. They were both recorded using an audiocassette recorder and transcribed verbatim.

7.2.5: Post lesson pupil interviews.

Immediately after every lesson, half of each sample group (n=4; female=2; male=2) took part in a focus group interview. The number of participants was limited due to the time restrictions placed on the pupils by the school. The pupils had permission to be ten minutes late for their next lesson. This left approximately fifteen minutes to conduct each interview. It was determined that conducting a focus group interview with eight pupils in fifteen minutes would have left little time to discuss the key issues in any depth. Therefore, it was decided that half of the group would be interviewed in one week and the other half interviewed in the following week. This would allow each pupil the opportunity to make a significant contribution to the discussion. This pattern continued until the end of the block. As a consequence, information from all of the pupils in the sample from at least two of the five basketball lessons was gathered. The questions posed to the pupils encouraged them to discuss what they learned (or areas of improvement), what they believed the focus of the lesson to be and what they enjoyed or did not enjoy about the lesson. At the end of each question, the researcher summarised the pupils' comments to check for understanding and accuracy. Once again this allowed the researcher to take notes that

highlighted the key issues raised. The interviews were recorded using an audiocassette recorder and transcribed verbatim.

7.2.6: Intervention.

The game-based lessons and the skill-focused lessons were those described in chapter 6. Lisa taught a five-week block of basketball based on the Tactical approach to teaching games (Griffin et al., 1997) and on a dynamical systems perspective of motor learning (Hanford et al., 1997; Williams & Hodges, 2005) (Appendix 8). Anthony delivered a five-week block of basketball that followed the PE department's programme for teaching basketball (Appendix 9).

7.3: Data Analysis

7.3.1: Team Invasion Games Questionnaire.

The purpose of the questionnaire was to gather information about the pupils' perception of competence in basketball (Fox & Corbin, 1989), enjoyment (Molt et al., 2001) and the personal value or importance they placed on basketball (Chen, 1996; Deci & Ryan, 2000; Wigfield & Eccles, 2002). A mixed design two-way repeated measures ANOVA was used to test for differences between the intervention and control groups in the dependent variables of perceived competence, enjoyment and value of the basketball from pre- post-intervention.

7.3.2: TARGET structures.

The TARGET (Ames, 1992) configuration modification of the Behavioural Evaluation Strategies and Taxonomies (BEST) (Sharpe & Koperwas, 1999) software

developed by Morgan et al. (2005b) was used to analyse the video data. For each of Ames' (1992) TARGET areas and motivational strategies, mastery, performance, and neither behaviours were identified and assigned a computer keyboard number or letter for coding. The computer keyboard was configured to permit the recording of multiple and overlapping frequency behaviours (task, recognition and evaluation) and duration behaviours (authority, grouping and time structures). Validity and acceptable intra and inter-observer reliability (greater than .80) was established during the development of the measure (Morgan et al., 2005b) in line with Sharpe and Koperwas's (1999) recommendations to ensure reliability and accuracy of data records and the use of recognised agreement tests and reliability procedures (Kazdin, 1982). Three researchers, instrumental in the development of the measure of teacher behaviours that influence motivational climate and trained in its use, undertook video analysis simultaneously on the observed teacher behaviours. The flexibility of the BEST system allowed the researchers to pause both the video and the software system and to replay the video for discussion until complete and unambiguous 100% agreement was reached on the coding of the mastery, performance and neither categories of teaching behaviours.

7.3.3: Post lesson pupil and teacher interviews.

For both the pupil and teacher post lesson interviews, the first stage of analysis involved reading and re-reading the transcripts in order to become familiar with the participants' responses. The pupil responses were then grouped according to the questions asked, thus providing a context specific and more focused framework for analysis (Taylor-Powell & Renner, 2003). The third phase of the pupil analysis

involved the identification of the key issues. This process was carried out independently by a second researcher. Subsequently, both researchers discussed the issues they had identified and agreed on the main issues raised by the pupils (Morgan et al., 2005b; Sproule et al., 2002).

Lisa and Anthony's interview transcripts were analysed separately. However, the data from each script was grouped according to the main areas of questioning, namely 'teaching strategy' and 'pupil learning' (Taylor-Powell & Renner, 2003). The key issues that emerged from each group were identified and the second researcher subsequently reviewed these issues. Both researchers then agreed on the most salient issues that emerged from each area of questioning. The next phase of analysis involved the identification of sub-groups by both researchers using the constant comparison method of analysis (Glaser, 1964; Podlog & Eklund, 2006). For the 'teaching strategies' group, this resulted in the emergence of two sub-groups, namely, 'pupil-centred' strategies and 'teacher-centred' strategies. For the responses linked to the teachers thoughts on pupils learning, the categories, 'game performance', 'game understanding', and 'affective development (enjoyment)' emerged.

The final phase of analysis, for both the pupil and the teacher interviews involved the identification of the TARGET structures (Ames, 1992). This was completed in order to consider the congruence between teacher behaviours and the interview responses

7.4: Results

7.4.1: Team Invasion Games Questionnaire.

A mixed design two-way repeated measures ANOVA was used to test for differences between the game-based class and the skill-focused class in the dependant variables of perception of competence, enjoyment and value from pre to post intervention. Results from the data revealed a significant interaction effect between classes (game versus skill) in perception of competence (Wilks's Lambda = .93, F (1,50) = 4.03, p = .05, eta sq = .08, observed power = .50) and enjoyment, (Wilks's Lambda = .80, F (1,50) = 12.18, p = .001, eta sq = .20, observed power = .93). The interaction effect for perceived value was not significant (Wilks's Lambda = .94, F (1,50) = 3.10, p = .08, eta sq = .06, observed power = .40), although this result was tending towards significance. Differences in the pre-post intervention means trends revealed that the game-based group perceived their ability as higher, enjoyed the sessions more and valued the game of basketball more within their PE curriculum compared to the skill-focused group (Table 7.1).

Table 7.1: Mean (± SD) responses from pre to post intervention for perceived competence, enjoyment and value. (Items scored 1-4; 1 indicating a more positive affective response and 4 indicating a more negative affective response.)

	Pre-Intervention				**Post-Intervention**			
Pupils' Responses	Skill (n=25)		Game (n=27)		Skill (n=25)		Game (n=27)	
	M	SD	M	SD	M	SD	M	SD
Perceived Competence	2.26	.59	2.37	.65	2.36	.46	2.17	.63
Enjoyment	2.07	.46	2.31	.63	2.23	.43	2.02	.57
Value	2.66	.60	2.63	.61	2.72	.60	2.47	.52

7.4.2: TARGET structures.

The percentage of 'mastery' 'performance' and 'neither' coded teaching behaviours was calculated for each of the individual (Table 7.2) and the combined (Table 7.3) TARGET structures for both teaching approaches. Observational computer based behavioural analysis of the TARGET behaviours revealed that both Lisa and Anthony applied more ego-orientated behaviours during the first lesson of the block. However, results also indicated that, as Lisa gained more experience teaching using a game-based approach, her behaviours changed from more ego-orientated to more mastery focused (Table 7.3). Specifically, Lisa focused more on self-referenced learning goals in multi-dimensional tasks. In addition, she also gave pupils more autonomy and decision-making opportunities, reduced comparative feedback, facilitated more mixed ability co-operative grouping and increased activity time. In contrast, overall analysis of the TARGET structures for skill-focused (Anthony) teaching revealed very similar percentages of mastery and ego behaviours in the pre- to post-intervention lessons.

Table 7.2: Percentage of 'mastery' 'performance' and 'neither' coded teaching behaviours for individual TARGET structures.

% ages	Games Lesson 1			Games Lesson 5			Skill Lesson 1			Skill Lesson 5		
	M	P	N	M	P	N	M	P	N	M	P	N
Task goals multi/uni diff	 .50 .50 .0	 .50 .50 .100		 .75 .50 .25	 .25 .50 .75		 .90 .0 .20	 .10 .100 .80		 .75 .0 .0	 .25 .100 .100	
Authority	20.9	79.1		71.7	28.3		6.9	93.1		41.7	58.3	
Recognition & Evaluation	0	63	37	0	57.4	42.6	13.8	77.6	8.6	0	86.2	13.8
Grouping	45.2	54.8		76.4	23.6		16.2	83.8		53	47	
Timing	0	44.4	Inactive 55.6	<1	69.6	Inactive 29.6	0	32.1	Inactive 67.9	0	51	Inactive 49

Table 7.3: Percentage of combined 'mastery' (M) and 'performance' (P) TARGET structures.

	Games Lesson 1		Games Lesson 5		Skill Lesson 1		Skill Lesson 5	
	M	P	M	P	M	P	M	P
Mean TARGET Structures	23.7	63.0	42.6	46.9	20.9	68.1	24.2	66.8

7.4.3: Post lesson teacher interviews: game-based teaching (Lisa).

Teaching Strategies: Pupil centred teaching strategies

When asked to discuss the teaching strategies she used, Lisa talked predominately about pupil-centred, game-based and problem-solving tasks. She explained how she presented the tactical problem at the start of each lesson using strategies that included question and answer and conditioned games. The practices that she used throughout each lesson were directly linked to the tactical problem. The individuals

within each team had to work together to solve the tactical problem through discussion and exploration of all the possible solutions in the practice and game settings. For example, in week 4 Lisa explained that the pupils had to work out the best formation to adopt in order to defend the space under the basket. This is consistent with a mastery co-operative grouping structure (Ames, 1992). She believed that this was successful because the pupils were able to share their ideas and because they all produced appropriate solutions to the problem.

The player that led each discussion and presented the teacher with the solutions to each problem was a peer nominated captain (a new captain was peer nominated each week). This is congruent with a mastery authority structure which encourages pupil's decisions and leadership roles (Ames, 1992). Lisa believed that this strategy was successful because, although it tended to be the games players that were the captains on the first week, eventually the 'less able' players were nominated and were able to take on board some responsibility. She believed that this was important because the 'less able' performers still understood the game and were able to solve problems, make decisions and organise their team.

Lisa kept the pupils in the same teams each week of the five-week basketball block. She described how the pupils requested to change teams for the first two weeks, but subsequently, seemed very happy to stay in their team. She believed that they became accustomed to working with each other and that it gave them a stronger feeling of being part of a team. She understood that this was particularly important because of the fact that the teams were mixed ability:

> It was good that the teams were mixed. The good players mixed with the not so able players and they really did help bring them on as part of the team. Lesson 5

Mixed ability grouping and differentiation is consistent with Ames' (1992) TARGET guidelines. However remaining in the same group is contrary to a mastery climate which encourages a variety of grouping within and between lessons.

In addition, Lisa also believed that the pupils enjoyed taking on board the responsibility she gave them. She explained that by the end of the block, the pupils were making nearly all of the decisions in the lesson. This emphasises mastery authority (Ames, 1992):

> I think almost every single one of them were enjoying it, probably again because its very games based, but again they had that little bit of responsibility. Lesson 5

Pupil Learning

Game understanding

When asked to discuss the pupils' performance during each lesson, the focus of Lisa's response was often linked to her perception of the pupils' improved game understanding. This is indicative of a self-referenced learning focus for evaluating pupils' (Ames, 1992). She believed that the pupils developed their understanding of each of the tactical problems they were presented with and how these linked to the game and to the practices/problem solving tasks. Lisa also believed that the pupils had a much better understanding of the game in terms of its shape and player roles within the game:

> Their team play seems to be better, they seem to have more shape, more understanding of where they should be on court, what they should do, how to get into the best position, how to move the defenders from under the basket. Lesson 5

She described how this increased knowledge and understanding about the game and different player roles within the game increased pupil involvement during play. Ultimately, this had a positive influence on their enjoyment.

Game performance

In addition to examining the pupils' improved game understanding, Lisa also discussed their enhanced game performance. Whilst she never talked about their performance improvements with regard to developed skills or techniques, consideration was given to how games play was progressed. She highlighted pupils' improved team-work, decision-making, movement on and off-the-ball and their application of the tactical solutions to the practices and to the games.

Pupil Enjoyment

When Lisa discussed the pupils' enjoyment of each lesson, her main focus was on their enjoyment whilst playing the game. They enjoyed starting each lesson with the game, they enjoyed the practices because they were directly linked to the game and they enjoyed the fact that so much of the lesson time was devoted to game play. However, she also stated that they enjoyed each lesson because they were able to recognise their own, and their team's success. This is in agreement with mastery evaluation (Ames, 1992).

The intended learning outcomes (linked to a tactical problem) were made explicit at the start of each lesson and then reinforced during every activity the pupils took part in. This appeared to result in an increased awareness and understanding of the tactical problem and the possible solutions. As a consequence, the pupils seemed more aware of when they were successful in applying the tactical solutions and solving the problem during each game:

> Everyone is having a little bit of success, even if they are not the ones that are scoring they are realising that once they are getting towards the target that they are helping their team mates by kind of spreading the court, and whether its an accurate pass they make or whether they score, they seem to all be quite enjoying it as a team. Lesson 2

Post Lesson Teacher Interviews: **Skill-Focused Teaching (Anthony)**

Teaching Strategies: Teacher centred teaching strategies

Consistent with a more performance involving motivational climate (Ames, 1992), most of the teaching strategies Anthony used during his basketball lessons were very direct, teacher-centred and skill-focused. His main objectives were linked to the development of specific basketball skills and techniques and he gave direct instruction and specific feedback about how the pupils could perform each skill:

> I was leading the session and they were following what I was doing basically, just trying to determine what these kind of people were like in the class. It was the first lesson with them so I had to try and keep me being in charge basically and show them what to do. Lesson 1

Anthony used question and answer techniques frequently during each lesson. The focus of these was on developing the pupils understanding of how to perform the skills. During the fourth lesson, he instructed the pupils to observe each other

perform the lay-up so that they could help each other improve their technique. Anthony provided the pupils with opportunities to play games, and at times, introduced competition into the practices. He did this in order to challenge the pupils and put their skills under some pressure, thus highlighting the more performance focused climate (Ames, 1992).

One of the teaching strategies Anthony discussed each week was the division of the class according to ability level. He seemed very concerned that he was not challenging the more able in the class and every week he suggested providing the more able pupils with more game playing opportunities and the less able with more time to practice the skills. However, congruent with more performance involving undifferentiated tasks (Ames, 1992), Anthony never employed this strategy.

Pupil Learning

Game understanding

When asked to discuss the pupils' performance after each lesson, most of Anthony's discussion was based upon their ability to perform the skills. Very little of what he said was linked to the pupils' game understanding. However, occasionally he mentioned that he would employ question and answer techniques in order to develop the pupils' understanding of when and how to perform the skills during the game:

> It was a bit like guided discovery, they were trying to work out what actually made a good pass…two hands, effective, probably looking more at achieving their goal of scoring, so they did a good pass, like a pass that was accurate, was it good weight on it, was it able to create the opportunity to shoot. Lesson 2

Game performance

When discussing the pupils' performance during each lesson, once again Anthony focused on their ability to execute the game skills. He believed that the pupils improved in their ability to perform the skills. However, he also recognised that their skills were rather fragile when faced with game pressures such as a defender.

The main aim of the final lesson was to give the pupils a grade based on their game performance, thus highlighting normative ability comparisons, which is a key feature of a performance involving motivational climate (Ames, 1992). Anthony recognised that he had not really covered any attacking or defending principles during this course, yet he still intended to assess the pupils' performance in these areas. In addition, he also intended to assess their ability to execute the skills during the game:

> I know we haven't covered defence that often, but to see if they had an understanding where they should stand, where they should be in a defensive situation and then when they go into attack maybe they had a shot, maybe they looked at positive pass, varied kind of pass kind of thing, rather than just run about. Lesson 5

Pupil Enjoyment

Anthony believed that the pupils in his class enjoyed his lessons because of the challenges he set, describing competitive practices that put the pupils under pressure. Interestingly, it was not until the last lesson that Anthony discussed the pupils' enjoyment in relation to playing games. This was perhaps because this lesson provided the pupils with the most opportunities to play games. All of the other lessons focused more on individual skill practices and some game-like/competitive practices. This provided very few opportunities to play a game that reflected the

adult version of basketball. Indeed, the third lesson of this block did not involve game play (a version of the adult game) at all.

7.4.4: Post lesson pupil interviews: game-based class.

What did you learn?

Despite there being some reference to learning skills during the game-based lessons, the pupils that were interviewed mainly discussed the principles of play that they learned. This was strongly linked to the notion of co-operative team-work (Ames 1992):

> Yeah the team work and the passing. (Lesson 2; Pupil 2: Female)

Importantly, the principles they discussed were closely related to the teacher's objective. For example, the objective of lesson three was to develop the pupils' understanding of ways to create space under the basket to move in close to shoot. One pupil explained what she had learned, stating:

> You had to like pass to either one of your team mates on either side of the basket, so the defender under the basket moved and then you could get back in. (Lesson 3; Pupil 3: Female)

In addition, another important aspect of these discussions was the fact that the pupils gave relatively detailed accounts of the principles they covered in each lesson:

> It means that they can run faster so that they can shoot the ball before other people get the ball. It means you can get a shot in before the defender gets them. (Lesson 2; Pupil 2: Female)

Areas of improvement

One of the main themes to derive from the discussions about the pupils' improvements after each lesson was the notion of enhanced teamwork. Consistent with mastery evaluation, grouping and authority structures (Ames, 1992), they believed that this improvement was as a result of their understanding of the game, their role within the game and the numerous opportunities they were given to play the game. The pupils' knowledge of the game and their perceived improvements in performance during games play made them feel more involved and encouraged them to work hard for their team mates during the game:

> I think people are interested in playing games because you don't get that involved like if you just do you skill work. (Lesson 1 Pupil 1: Female)

Focus of learning: games or skills?

After every lesson, all of the pupils agreed that the main focus of the lesson was on developing their game performance. They concurred that this was achieved through playing games and taking part in activities that they thought resembled the game. In agreement with mastery tasks that focus on variety and interest (Ames, 1992), pupils believed that this was an appropriate way to learn to play games because they were much more interesting and less boring than practicing skills:

> You are doing loads of like different things, because if you are doing your skill work, and I know you just focus on one thing, if you play games you have to work on your dribbling, your passing, your shooting and team work and general things like that. (Lesson 1; Pupil 1: Female)

The pupils discussed the games and game-like practices from each lesson in a very focused way. Once again they linked them to the principles of play they were

covering in each of the lessons. In addition, one of the boys stated that being given the opportunity to play the game was important for his skill development because ultimately he has to be able to perform the skills in the game:

> Because like if you just practice skills and that there is no point in being able to do them if you can't do it in a game. (Lesson 5; Pupil 4: Male)

Enjoyment

In general, the pupils that were interviewed after each lesson stated that they enjoyed their learning experiences. In particular, they enjoyed playing the games, being involved and feeling like they had improved. The discussions that pupils had with regard to the aspects they did not enjoy were focused on the fact that they did not get to choose their team mates and had to remain in the same teams throughout the five-week block. One of the pupils mentioned that he wanted to be in a team with better team mates and play against more able players. In addition, another pupil mentioned that she wanted the opportunity to play with different people. This highlighted the need for variety in the grouping structures both within and between lessons as suggested by Ames (1992):

> Yeah, I never liked a couple of games because we weren't playing hard people, we were playing easy people. We want more competition. (Lesson 1; Pupil 6: Male)

Interestingly, these concerns were only expressed during the interviews that took place after the first three lessons.

Post Lesson Pupil Interviews: *Skill-Focused Class*

What did you learn?

The main focus of the discussions with regard to what the pupils had learned during each lesson was on the development of basketball skills:

> Just how, how to shoot like to bend your legs and aim. (Lesson 3; Pupil 7: Female)

They discussed the principles of attack and defence, but only in a vague way. However, one pupil described defending in terms of the technical components of a defensive stance:

> Yeah cause I used to be like quite rubbish at defending. But now I can actually do it properly and that's how I know I've actually done it. Before I would always stand like straight and that. But now I've got my knees bent and that. And I'm ready when people come up I'm easily running to them. (Lesson 5; Pupil 3: Male)

Areas of improvement

When asked if they believed that they had improved after each lesson, all of the pupils believed that their basketball skills had improved. They described how they were better at dribbling, passing and shooting and usually based their success on whether they scored or whether they won their game, which suggests a more performance focused comparative definition of success (Ames, 1992):

> Because I was never that good at shooting before but I've improved a bit because I've been scoring more baskets. (Lesson 4; Pupil 3: Male)

Focus of learning: games or skills?

The pupils that were interviewed after each lesson all recognised that the main focus of each lesson was on the development of game specific basketball skills. They all believed that learning skills was very important and that this had to be done if they wanted to improve their game performance. This is consistent with a mastery focused climate (Ames, 1992):

> Practicing the skills...well that's good because you can't really just go and shoot before you, before you do like practicing cause then you won't know what to do. (Lesson 3; Pupil 5: Female)

The pupils that were interviewed after the third lesson did not seem concerned that they were not given any opportunities to play the game during this lesson. They played a shooting game that involved trying to score a basket before the player behind them, but they did not apply their shooting skills in a small-sided game.

Enjoyment

Even though there were often limited opportunities to play the game during this five-week block of basketball, particularly in the third week, all of the pupils that were interviewed enjoyed each of the lessons. In agreement with a mastery task structure (Ames, 1992), they enjoyed learning skills, especially when they were presented in a fun and challenging way, often in the form of indirectly competitive practices. Although the pupils seemed to enjoy learning skills, they also enjoyed the times during the lessons when they were provided with more authentic game playing opportunities:

Because we got to play games and show each other what skills we've learned. (Lesson 5; Pupil 7: Female)

7.5: Discussion

This study found a significant difference between the game-based class and the skill-focused class in perceived competence ($p=0.05$) and enjoyment ($p=0.001$). This indicates that the game-based class enjoyed their lessons more and perceived their competence as higher compared to the pupils who took part in the skill-focused lessons. The interaction effect for the pupils perceived value of basketball within their PE curriculum was not significant, although figures show that the results were tending towards significance ($p=0.08$), thus indicating that the pupils in the game-based class valued the game of basketball more than the skill-focused class.

Observational computer based behavioural analysis of the TARGET behaviours, revealed a change to more mastery focused teaching behaviours during the game-based teaching approach. More specifically, Lisa focused on self-referenced learning goals in multi-dimensional tasks and gave pupils more autonomy and decision-making opportunities. In addition, she reduced comparative feedback, facilitated more mixed ability co-operative grouping and increased activity time as a result of the game-based teaching approach. In contrast, overall analysis of the TARGET structures for skill-focused teaching revealed very similar percentages of mastery and ego behaviours in the pre- to post-intervention lessons. Thus the game-based teaching approach influenced the motivational climate to be more mastery involving for the pupils (Table 7.3).

Consistent with the behavioural analysis, the teacher interviews indicated that Lisa used more mastery focused pupil-centred strategies and discussed the pupils' performance in terms of their game performance and their game understanding. Anthony used more performance involving teacher-centred strategies and discussed the pupils' performance in terms of their ability to execute game skills. The pupils in the game-based class valued learning through the game and discussed game understanding, teamwork, and success in solving tactical problems, enjoyment, involvement and interest. The skill-focused class valued skill learning and evaluated their performance based on the successful execution of game skills.

7.5.1: Perception of competence.

Perception of physical competence is a very important factor in determining pupil intrinsic motivation in PE and participation in physical activity (Biddle et al., 2003; Ommundsen and Kvalo, 2007; Weiss & Ferrer-Caja, 2000; Welk, 1999). A major influence on pupil perception of competence is the ability to evaluate *actual* physical competence (Welk, 1999). Young children believe that their ability within PE and physical activity is linked to the amount of effort they apply to a task. However, as they approach adolescence they become much more adept at making an accurate judgement about their actual competence level. When their actual competence level is high, their perception of competence is high. Conversely, when their actual competence level is low, their perception of competence is also low (Welk, 1999).

Questionnaire results revealed that the pupils who were in the game-based lessons perceived their competence level in basketball to be higher after taking part in a five-

week block of PE. This is in comparison to the pupils in the skill-focused lessons. As pupil performance did improve during the game-based lessons (as evidenced in chapter 6), one possible explanation for these findings is that the pupils were aware of their improvements in performance and this had a positive effect on their perception of competence in basketball. However, this finding may also be due to increased pupil autonomy and self-reflection in lessons as a result of a more mastery focused (Ames, 1992) authority structure over the five weeks.

7.5.2: Authentic learning environment.

Research findings (including the findings from Chapter 6) have demonstrated that game-based approaches to teaching have a positive effect on pupils' game performance. This is in comparison to more traditional skill-focused teaching styles (Allison & Thorpe, 1997; Jones & Farrow, 1999; Rovegno et al., 2001; Turner & Martinek, 1999). It is important to understand that game performance does not only refer to the execution of individual game skills. The ability of pupils' to make decisions about what to do and when to do it, both on and off-the-ball are also crucial. These are skills that are linked to the players' knowledge of the game and their interactive and dynamic relationship with the game.

Game-based approaches provide the learner with authentic learning environments that require and facilitate game understanding through active engagement in 'real' game situations. From a dynamical systems, or non-linear perspective performance develops in this authentic learning environment because of the system's (or player's) ability to self-organise as he/she explores and interacts with the task and the

environment (Chow et al., 2007; Williams & Hodges, 2005). This process facilitates the player's recognition of the affordances within the environment, or the opportunities he or she has for action. The more authentic the learning environment is, the more relevant these affordances will be. Presenting pupils with less authentic learning environments and encouraging them to focus on the internal patterning and sequencing of movement, rather than exploring the game environment, limits their potential to understand the game environment. As a consequence, this does not stimulate them to recognise affordances and may affect their overall game performance, including decision-making.

In the present study, the pupils in the game-based class described how they believed that their game understanding and decision-making had improved as a result of the many opportunities they had to play the game. Reflecting this, Lisa used terms linked to improved game knowledge, increased tactical awareness and better decision-making when discussing the pupils' improvements in game performance. In contrast, neither the pupils nor the teacher from the skill-focused class considered improvements in performance in relation to the game or decision-making. They discussed improvements in performance in relation to on-the-ball technique, which is indicative of the isolated skills practices they were presented with during each lesson.

Presenting pupils with authentic, game based learning environments provides a possible explanation as to why there were differences in the pupils' accounts of their TIG lessons. However, it is unreasonable to suggest that this was the only factor that

affected their learning experience. Teaching and learning is a very complex and multi-faceted process. In order to understand more about pupil learning when different TIG teaching approaches are employed it is necessary to go beyond the teaching approach. In depth investigation into the learning environment is required in order to gain a greater understanding of the factors that influenced the pupils' learning experiences.

7.5.3: Task design.

One of the structures the teacher can manipulate in order to create a mastery motivational climate is the task. When tasks are interesting, varied and designed for inclusion, pupils are more engaged in learning and are able to take part at a level more suited to their own ability (Morgan & Carpenter, 2002; Morgan et al., 2006). The tasks that were presented in the game-based lessons could have been perceived to be varied, interesting and designed for inclusion as they were all directly linked to playing a game. For example, Lisa commented on the pupils' improved teamwork, highlighting that the tasks she presented could only be resolved if they worked together as a team, thus emphasising the notion of inclusion. The pupils who stated that they felt more involved during these tasks supported this.

Furthermore, variation was inherent in the tasks Lisa provided her pupils. Each task presented the pupils with a problem to which there were a number of both movement and tactical solutions. This type of problem solving approach is reflective of the productive teaching styles identified by Mosston and Ashworth (2002). Research within the PE context demonstrates that these styles increase cognitive engagement

in the task (Mawer, 1999), enhance pupil enjoyment of the task (Morgan et al., 2005a) and have a positive influence on pupils' motivation towards PE (Salvara et al., 2006). Certainly, the pupils in this study who were exposed to problem solving tasks discussed how they enjoyed learning through game-like activities. Indeed they believed that they learned more and felt more involved. These problem-solving activities also encouraged the pupils to take part in observation, discussion and evaluation. These are skills that may have contributed further to the pupils' increased knowledge about the game. This knowledge was reflected in their detailed and relatively sophisticated discussion about the different principles of play they had learned.

In contrast, the skills-focused class were presented with tasks that concentrated on the development of game skills through repetitive, progressive and indirectly competitive practices. These are practices that require low levels of cognitive processing (Lee et al., 1991). The pupils in this group discussed their learning in terms of the skills and demonstrated a limited knowledge of concepts such as 'attack' and 'defend'. Importantly, the skill-focused class enjoyed the variety of activities that their teacher presented to them, stating that they were 'fun' and 'challenging'. However, there was no discourse in relation to feelings of inclusion (involvement).

7.5.4: Recognition and evaluation.

Game knowledge may also have been a key factor in the 'game-based' pupils' ability to determine what they had achieved during each class. Those who were interviewed believed that they had been successful during the lesson. However, this was deemed

to be with regard to reaching the specific game objective/solving the task problem and not in relation to executing game skills. In conjunction with the TARGET behaviours identified by Ames (1992), evaluation is linked to self or group-improvement, effort and mastery of the task. Emphasis in learning during the game-based lessons was placed on solving the problems as a team and on team improvement. This seemed to promote collaborative learning where pupils supported each other rather than focussing on individual improvements by comparing or competing with another team member. Certainly, there was no evidence from the teacher and pupil interviews that suggested peer comparisons were used to evaluate their success or improvements.

The objective for the pupils during practice in the skill-focused lessons was quite different. The emphasis during each lesson was on how well each individual performed on-the-ball basketball skills. The pupil and teacher interviews did not indicate that peer comparisons had been used to measure their success. However, there was some evidence to suggest that they based their success on the outcome of their individual performance. One of the issues with placing such an emphasis on performing skills is that they have to be performed within a socially evaluative environment. This can lead to fear of negative evaluation by peers and/or teachers, avoidance behaviours (Carr, 2006) or self-handicapping behaviours (Standage et al., 2007). This is particularly significant with pupils who are low in perceived competence (Ridgers et al., 2007).

7.5.5: Grouping.

For both the game-based and the skill-focused classes, the teams and the practice groups were made up of a mixture of ability levels. However, the main difference was that the groups in the game-based class remained the same in every lesson during the five-week block. The same pupils practiced together and played together. This is contrary to Ames (1992) guidelines for creating a mastery climate. These suggest a variety of heterogeneous grouping arrangements both within and between lessons. This may explain why post lesson pupil interviews revealed that this was an issue at the outset. Initially, they wanted to change teams and/or play with and against more able pupils. However, towards the end of the block, this did not appear to be a problem any more. The teacher of the game-based class believed that this was a useful way to organise each lesson for a number of reasons. She believed that it developed the pupils' ability to work as a team, increased pupil involvement and allowed the pupils to recognise that the teams had improved throughout the five-week block. In addition, she also felt that the more able pupils helped the less able pupils and she could evaluate how much the teams had improved throughout the block.

Many of the tasks set in the skill-focused lessons involved working in mixed ability groups. However, these groups changed from week to week (and sometimes task to task), and usually, the focus of the task was on the pupils' individual performance. The pupils were not given the opportunity to develop 'team skills' such as co-operating, communicating, sharing and problem-solving. In addition, they did not have time to learn to play as a team and see any improvements as a team. This is due

to the limited opportunities given to pupils to play games during the lessons (except for the final lesson).

7.5.6: Authority.

Motivational climate literature proposes that a mastery oriented motivational climate is created when the teacher hands over responsibility to the pupils for their own learning This can be achieved when the teacher applies pupil-centred, problem solving teaching styles. During the game-based lessons, the teacher set the problem, provided conditioned games and encouraged each team to work together in order to come up with their own solutions. Ommundsen and Kvalo (2007) found that a mastery climate and teacher autonomy support positively influenced pupil intrinsic motivation in PE. However, when learners are presented with a more controlling environment where they are not given any responsibly to make decisions about their learning, they are more likely to lose interest in the task and ultimately learn less, especially when the task requires conceptual or creative processing (Deci & Ryan, 2000).

The objectively measured TARGET behaviour data, and the findings from the teacher interview, indicated that the teaching approaches used in the skill-focused lessons were more 'controlling'. This may have negatively affected the pupils' feelings of autonomy and subsequent effort and learning. Additionally, the pupil interviews revealed that the pupils from each group acquired different types of knowledge about basketball (conceptual/tactical in the game-based lessons compared to technical in the skill-focused lessons) perhaps evidencing different levels of task

engagement depending on whether the content and learning was driven by the teacher or by the pupil.

7.6: Conclusion

The findings from this study show that those pupils who took part in the game-based lessons exhibited significant and positive changes in perception of competence, enjoyment and value towards basketball. This is in comparison to the pupils who took part in the skill-focused lessons. It would appear that teaching basketball using a game-based, pupil centred approach, positively influences those affective responses that are essential in the promotion of continued participation in physical activity. In addition, the findings from this study also demonstrate that the teacher who adopted a game-based approach to teach basketball exhibited more mastery behaviours than the teacher who taught using a more traditional, skill-focused, approach.

When Lisa taught basketball, she set interesting, game-related tasks that encouraged whole group involvement, regardless of ability level. She also promoted the use of problem-solving skills that encouraged the pupils to take responsibility for their own learning. These findings support previous research on productive, or pupil-centred, teaching styles and teaching behaviours that promote a mastery motivational climate (Morgan et al., 2005a). In contrast, the teacher who used a more traditional, skill-focused and teacher-centred approach to teaching games, concentrated more on the individuals' ability to perform specific basketball skills. He set tasks that demanded limited game understanding or cognitive processing and organised mixed ability

groups and teams. However, he did not emphasise or encourage team skills such as co-operating, sharing or problem solving.

One of the limitations of this study is that the pupils were not consulted in relation to how they perceived the motivational climate. This is important because the way in which pupils perceive the motivational climate will influence the way in which they approach the learning task, and ultimately, how they learn (Sproule et al., 2007). Despite this, the pupil interviews did provide some information about pupil learning. The pupils in the game-based class valued learning through the game. They discussed game understanding, teamwork, and success in solving tactical problems, enjoyment, involvement and interest. The skill-focused class valued skill learning and evaluated their performance based on the successful execution of game skills.

These findings should provide those responsible for curricular development and innovation in Scotland with information to develop and enhance TIG teaching in Scottish schools. Teaching strategies such as Tactical approach (Griffin et al., 1997) or manipulating task constraints (Chow et al., 2007) appear to promote a mastery oriented motivational climate. This enhances the affective responses that are critical to engagement and continued participation in PE and physical activity (Deci & Ryan, 2000; Li et al., 2007; Wigfield & Eccles, 2000). Thus, a game-based teaching approach seems to have the potential to make a positive contribution to the health and well-being of children, and adults, in Scotland.

Chapter 8: General Discussion and Conclusion

8.1: Teaching and Learning Team Invasion Games

The main purposes of this thesis were threefold. Firstly, to investigate P7, S2 and S4 pupils experiences and perceptions of TIG within the context of their PE lessons. Secondly, to investigate the ways in which teachers deliver TIG and the knowledge and beliefs that underpin their teaching approaches. Finally, this thesis aimed to investigate both the outcomes (knowledge and game performance) and the processes (pupil experiences, teacher thoughts and motivational climate) involved in teaching S1 pupils using a game-based approach compared to a traditional, skill-focused approach. Therefore, the aims of this chapter are to synthesise and conclude the findings of the series of studies as a whole. A brief summary of the rationale and the research process precedes the summary of findings, practical implications and recommendations for future study.

8.2: Physical Education and Team Invasion Games in Scotland

The landscape of PE in Scotland appears to be changing. In a drive to improve the health and well-being of young people in Scotland, the focus for PE in primary and secondary schools seems to be moving away from an emphasis on performance, towards a PE curriculum that encourages individuals to pursue a physically active lifestyle (Bailey et al., 2008). Children are less active than they were 50 years ago and the prevalence of childhood obesity and related disorders is increasing in Scotland and throughout the globe (Cole et al., 2007). Recent data from the Scottish Health Survey (Scottish Executive Health Department, 2003) show that 35% of boys

and 30% of girls are overweight or obese, a key cause of which is believed to be inactivity (Van Sluijs et al., 2007).

In order to improve the health and well-being of pupils in Scotland and assist in the battle against childhood obesity, the Review Group on PE (2004a) recommended that children should be doing two hours of quality PE per week. However, although this is a welcome gesture towards improving the health of the nation, there is no evidence to suggest that PE lessons provide any benefit to health. Indeed, Scottish Executive ministers have recently reneged on their pledge to provide every pupil with two hours of specialist PE teaching each week, claiming that providing extra PE is not the solution to the health and obesity problems. Substantiating this claim, data from England (Fairclough & Stratton, 2005), where the time allocation for PE is less than in Scotland, showed that children spent as little as 34% of lesson time engaged in moderate to vigorous levels of physical activity. However, appropriate, high intensity activity during PE lessons may benefit health through transient changes in metabolism. For instance, it has been shown that although fat oxidation is lower during high intensity physical activity, it is followed by far higher levels of fat oxidation for several hours post exercise (Yoshioka et al., 2001). One of the ways in which the PE curriculum in Scotland could address this is to include activities that are high intensity and intermittent in nature i.e. TIG such as basketball and field hockey.

Preserving the place of TIG within the Scottish PE curriculum is not only important from a health perspective. TIG such as soccer, basketball and rugby also play an

important role from a cultural perspective within Scottish society. Additionally, they contribute significantly to the physical education of young people by providing them with opportunities to develop skills within the psychomotor, cognitive and affective domains. However, if the health agenda led by the Scottish Government filters down into schools, then this could lead to a reduction in the range of TIG taught and the length of time teachers can spend teaching TIG. This is because one of the ways in which it is proposed to increase participation levels in PE is to widen the PE curriculum and include activities such a skateboarding and yoga, thus providing pupils with more choice and more contemporary experiences. Already in schools, PE departments are offering girls more choice from aesthetic and fitness activities in an attempt to increase participation rates, an action praised by Her Majesty's Inspectorate of Education (HMIE, 2008) in a review of current practice in Scottish schools. In this same review, PE curriculum design is described in terms of width, balance and choice, however, the principle of depth appears to have been overlooked. This is problematic because a curriculum that lacks depth could result in the notion of 'activity sampling' (Thorburn, 2007) rather than on providing pupils with opportunities to explore each activity in a deep and rigorous way, thus facilitating learning and improvements in performance. This is also important because previous research suggests that one of the main reasons children and young people opt out of physical activity is because of their low levels of competence (both perceived and actual) in those activities (Corbin, 1999; Welk, 1999).

Another issue with the potential changes that the Scottish PE profession is facing is that they do not seem to derive from any Scottish-based empirical research. There is

evidence to suggest that they are based on previous HMIE reports (1995, 2001), but no evidence to suggest that they have been based on academically rigorous investigations underpinned by methodologically sound research principles. Consequently, the purpose of this thesis was to begin the process of gathering empirical data that would provide detail about the role of TIG within the Scottish PE curriculum and potentially act as a catalyst for more empirical research to take place in Scotland.

The focus of this thesis was a Scottish urban state school and its three feeder primary schools and the purpose of the investigation was to gather data in three main areas. Firstly, this thesis aimed to investigate pupils' experiences and perceptions of TIG within the contexts of their PE lessons. Secondly, this investigation examined the ways in which teachers delivered TIG and the knowledge and beliefs that underpinned their teaching approaches. Finally, this thesis investigated both the outcomes (knowledge and game performance) and the processes (pupil experiences, teacher thoughts and motivational climate) involved in teaching S1 basketball using a game-based approach compared to a traditional, skill-focused approach. The findings from this research (and of any future Scottish-based research) may encourage the Scottish Government to generate initiatives that will improve the quality of TIG teaching in Scottish schools. By introducing teaching strategies to enhance game performance pupils should experience more enjoyment from playing TIG and ultimately develop a positive attitude toward both TIG and PE. These findings may also remind those working in curriculum development of the invaluable contribution TIG can make to the education of pupils in Scottish schools.

8.3: Research Findings: Pupil perceptions

The P7 pupils in this study valued the role of TIG within their PE curriculum more highly than the S4 pupils and this view was associated with their perception of competence and their enjoyment of TIG. The focus group interviews confirmed this when pupils from all year groups discussed how they enjoyed the games where they were high in perceived competence and disliked the games where they were low in perceived competence. Additionally, the S2 and S4 pupils revealed that playing in the same team as more able peers reduced their level of involvement in the game and that this made them less motivated to want to participate in TIG. Implicit within this is that these pupils wanted to be involved in play. Those S2 and S4 pupils who said that they enjoyed small-sided games or games where they were playing with pupils with a similar level of ability supported this further.

8.4: Research Findings: Teachers' Beliefs and Pedagogical Practice

The teachers in this study valued the 'traditional' curriculum in which they taught and believed that TIG play a very important role within this curriculum. They discussed their beliefs about PE curricula in terms of health and enjoyment, and believed that TIG could contribute to their curricula through the development of skills such as problem solving, communicating and co-operating. Surprisingly, none of the teachers discussed the aims of PE or TIG explicitly in terms of improving performance. However, this was not the case when the PE teachers taught TIG. Evidence from the video stimulated recall interviews suggested that, although their views about the role of PE and TIG were broad, their approaches to teaching TIG and the beliefs underpinning their approaches to teaching TIG were rather narrow,

associated explicitly and almost exclusively with the development of the pupils' performance of motor skills. The teachers in this study principally used teacher-directed, skills-first approaches to teach TIG, focussing on the development of 'on-the-ball' technique before the development of game play or game understanding. Additionally, although the teachers emphasised the importance of 'involvement' in TIG, the strategies they used to involve their pupils in games play have the potential to impact negatively on pupil enjoyment and performance in games.

8.5: Research Findings: Teaching and Learning Team Invasion Games

8.5.1: Game knowledge.

There were no differences between the two classes in terms of the ways in which they verbally articulated their knowledge about the game of basketball before the five-week block of basketball. Both groups discussed the skills and the rules that they learned during their P7 basketball experiences. However, when asked to discuss what they had learned about the game of basketball after the five-week block, the group that took part in the skill-focused lessons discussed the technical components of basketball skills, and the pupils from the game-based lessons discussed the different principles of play that they applied during practices and games.

8.5.2: Decision-making.

The pupils in the game-based group believed that their decision-making abilities both on and off the ball had improved as evidenced by their increased scores from the tactical skills inventory. In contrast, the skill-focused class believed that their decision-making abilities had deteriorated over the five-week period.

8.5.3: Game performance.

The 4v4 game performance data demonstrated that the game-based group made significantly more good decisions on and off-the-ball compared to the skill-focused group. Data also revealed that differences in off-the-ball decisions were highly significant. There were no significant differences between groups post intervention in terms of on-the-ball skill execution. Nevertheless, the mean scores did indicate a trend towards an increase in good skill execution and a decrease in poor skill execution post intervention for both groups. Importantly, when these results are considered together with the game-based groups significant improvements in decision-making on-the-ball post-intervention, one could deduce that the game-based group's overall performance improvements were greater than the skill-focused group. This is because being able to perform game specific skills is of no value unless they are executed successfully within the context of the game and facilitate the attainment of the player's, and the team's, game objectives.

8.5.4: Games teaching and motivational climate.

The teacher who adopted a game-based approach to teach basketball exhibited more mastery behaviours compared to the teacher who taught using a more traditional, skill-focused, approach. When the game-based teacher taught basketball, she set interesting, game-related tasks that encouraged whole group involvement, regardless of ability level. She promoted the use of problem solving skills that encouraged the pupils to take responsibility for their own learning. In contrast, the teacher who used a more traditional, skill-focused and teacher-centred approach to teaching games, focused more on the individuals' ability to perform specific basketball skills, set tasks

that demanded limited game understanding or cognitive processing. He organised mixed ability groups and teams but did not emphasise or encourage team skills such as co-operating, sharing or problem solving. The pupils in the game-based class valued learning through the game and discussed game understanding, teamwork, success in solving tactical problems, enjoyment, involvement and interest. The skill-focused class valued skill learning and evaluated their performance based on the successful execution of game skills.

8.6: Practical Implications

The findings from this investigation are very important on a number of different levels. They highlight the fact that it is crucial that both teachers and pupils are consulted on matters that directly affect them. These results demonstrate that pupils are entirely capable of articulating their views about their PE experiences, views that are indispensable if teachers are to provide them with appropriate and meaningful learning experiences. Likewise, teachers should be consulted on matters that directly affect their working lives. Ultimately, teachers are responsible for the delivery of the curriculum and should be a part of this process. They hold valuable knowledge about their pupils, the curriculum and resources and this knowledge should be tapped into to promote change and innovation. When this happens, teachers are more likely to accept change and integrate recommendations for change into their professional practices (Spencer, 1996). Conversely, when they are excluded from such processes, they may not see the relevance or the need for change and, as a result, continue to deliver the same content in the way they have always done so (Curtner-Smith, 1999).

The results of the consultation that took place as part of this investigation demonstrate that, contrary to views expressed in recent government documentation (Scottish Executive, 2004a), both teachers and pupils in this case study did value the role of TIG within the PE curriculum. The findings suggest that pupils become disengaged or disinterested in TIG not because of the games themselves, but because of other factors such as perception of competence and peer groupings, factors that teachers can have some control over when they are teaching TIG. However, since the S2 and the S4 pupils in this investigation expressed more disinterest in TIG than the P7 pupils, it is likely that the teachers in this investigation were not aware of the ways in which they could make a positive impact on the pupils' interest and engagement when teaching TIG.

In order to develop teachers' ability to teach TIG, it is not enough simply to explain that there are different, or alternative, teaching approaches that can be employed. If teachers are to develop their teaching ability, increase pupil engagement and improve pupil performance, then they must also develop their understanding of the theoretical constructs that underpin such alternative approaches (Capel, 2007; Light, 2008). Typically, teachers' practices are based on their unquestioned beliefs that learning is a linear process of internalising pre-existing external bodies of knowledge. From PE and TIG perspectives, this means internalising the pre-determined fundamental motor skills that are viewed as prerequisite to games play (Light, 2008). However, learning is much more complex than this. This investigation has highlighted learning theories that reinforce a more complex view of learning, for example, constructivism (Wright, 2004) and dynamical systems (Chow et al., 2006), both of which

demonstrate the dynamic interactions of the learner within the environment in the construction or emergence of effective, intentional and functional movements. In highlighting this multifaceted view of learning, Light (2008) describes 'complexity theory'. It is based on the premise that, although there are different types of constructivism, they all revolve around three key tenets. Firstly, that learning is an ongoing process of adaptation shaped by the learner's experiences. Secondly, that cognition is both an individual process and a social process, and finally, it rejects objectivist views of learning that knowledge is an internal representation of an external reality and accepts that 'learning involves interpretation in which there is no pre-given external reality' (p. 28).

Teaching a series of discrete skills in a simplistic, reductionist and teacher-directed way, therefore, is not consistent with this view of learning. Consequently, if teachers understand learning as a more complex process underpinned by theory, then this may encourage them to adopt different teaching approaches that offer pupils a wider and more diverse range of experiences that hold more potential for learning (Light, 2008). Such experiences could be created by adopting alternative approaches to games teaching such as TGfU (Bunker & Thorpe), Tactical approach (Griffinn et al., 1997), Deliberate Play (Cote & Hay, 2002) and Sport Education (Siedentop, 1994), approaches that have been associated with 'complex' theories of learning such as constructivism and dynamical systems theory. Understanding theory, therefore, may encourage teachers to question their current beliefs about teaching and adopt alternative approaches so that they may enhance their pupils' performance and affective experiences during TIG lessons.

Another important consideration in relation to teaching and learning TIG is the promotion of self-determined behaviour, a key construct of which is intrinsic motivation (Deci & Ryan, 2000; Papaioannou et al., 2006; Wigfield & Eccles, 2000). Everyone is capable of being intrinsically motivated and this capability can be influenced either positively or negatively by the environmental conditions the individual is exposed to (Deci & Ryan, 2000). Moreover, recent research has demonstrated that a mastery motivational climate, where success is defined in relation to self-referenced effort and improvement, can positively influence intrinsic motivation (Ommundsen & Kvalo, 2007). Teachers, therefore should develop their understanding of the behaviours they need to exhibit in order to create a mastery climate and increase intrinsic motivation. This may also raise their awareness of pedagogical strategies linked to ability grouping and challenge, two of the issues raised by the pupils in this study that either positively or negatively affected their TIG experiences.

Ultimately, the aim of developing teacher knowledge of both theory and practice is so that they have the tools to develop pupils' TIG performance and enhance the affective responses that are critical to engagement and continued participation in PE and physical activity (Deci & Ryan, 2000; Li et al., 2007; Wigfield & Eccles, 2000). In doing so, teachers can deliver TIG in a way that makes a positive contribution to the health and well-being of children, and adults, in Scotland. However, encouraging teachers to change the way they teach may not be easy since their beliefs about teaching are extremely robust. Consequently, teachers find it very difficult to understand that there are different approaches to curriculum design and pedagogy.

Teachers' beliefs are developed from a young age and are often reinforced by their Initial Teacher Education (ITE) experiences and by other PE teachers. Additionally, many teachers do not see the value in developing their understanding of theory and instead prefer to adopt a much more practical approach to develop their pedagogical understanding (Capel, 2007). Moreover, many teachers believe that knowledge about teaching is fixed or static and is represented by a taken for granted set of unproblematic routines (Capel, 2007). In Scotland, the difficulty of developing teachers' pedagogical knowledge is augmented even further by the pressures placed upon them to develop their knowledge of curriculum content, particularly content linked to the Higher Still PE (HSPE) curriculum (Thorburn, 2006). Brewer (2003) indicated that teachers' lack of subject knowledge was affecting their confidence to teach HSPE and so there was an increased demand for resources that prescribed the content that was to be delivered. MacPhail (2004) also noted this problem suggesting that it may result in teaching that simply reproduces curriculum guidelines rather than producing or re-contextualising such guidelines.

In order to develop teachers' pedagogical knowledge and practice in all of the activities within the PE curriculum (not only in relation to teaching TIG), there has to be a shift of focus within the profession (ITE, Continued Professional Development (CPD) initiatives and schools). There needs to be a greater emphasis in schools, ITE and CPD on how to deliver content rather than on what content to deliver. Wright et al. (2005) found that when PE teacher education (PETE) students took part in a basketball unit that focussed on the delivery of games concepts using constructivist

methods, not only did the students' basketball performance improved, but also they applied a game-based approach to teaching when designing their lesson plans.

Planning and teaching in this way requires a much more in-depth knowledge about the theory that underpins teaching and learning. Tsangaridou (2008) proposes the delivery of courses that provide teachers with an understanding of theory about teaching, and apply reflective strategies to develop their pedagogical knowledge. This change of focus may encourage teachers to question their own beliefs about teaching and ultimately transform them so that they begin to develop much more informed, effective and flexible approaches to teaching. From a TIG perspective, ITE and CPD initiatives should also highlight all of the factors that contribute to an effective games performance, particularly in relation to the learning and assessment of tactical decision-making on-the-ball, and perhaps more importantly, off-the-ball.

8.7: Recommendations for Future Study

At the onset of this study, one of the aims was to highlight the need for more research to be carried out within Scottish schools so that changes to the PE curriculum and teacher practice could be more informed. Consequently, it is important that future research in this area is meaningful, relevant and withstands any issues linked to the concepts of reliability and validity. Although the present investigation has initiated this process and has reported findings that are ecologically valid, it is important to note that one of the key limitations was that the time of the intervention was relatively short (five weeks). Moreover, there were no tests carried out to measure any retention effects of each teaching approach. Chow et al. (2007)

suggest that learning is complex, non-linear and takes place when learners are engaged in complex and meaningful problem-based activities and apply knowledge in diverse and authentic performance contexts. In order to investigate whether or not 'real' learning has taken place, it is suggested that the intervention period should be longer and retention tests should be carried out. Additionally, this thesis only looked at one urban state school in Edinburgh and its three feeder primary schools. More research investigating pupil and teacher experiences, beliefs and practices should be carried out within a variety of different types of schools and socio-economic areas, including schools in the private sector. This will paint a more accurate picture of the factors that influence pupils' interest and engagement within PE.

Another key area that warrants future investigation is that of teacher education. It is important to investigate teachers' beliefs and the effect challenging them has on their current practice. Importantly, such research should not be limited to undergraduate students with ITE institutions, but should also be extended to include the impact CPD initiatives can have on teachers' beliefs and practices. More research should also be carried out to investigate alternative teaching approaches such as TGfU and the Tactical approach and the effects they have on pupil performance. For example, what processes and changes are taking place when task constraints are manipulated during games teaching and what are the key TARGET behaviours that influence pupils' engagement in learning during games lessons? Investigating the processes of teaching TIG may help to understand why they appear to be more effective than 'traditional' approaches to games teaching and also explain more clearly some research findings have been somewhat equivocal. Importantly, if we are to

understand the processes involved in teaching and learning TIG then a more sensitive means of gathering data on game performance may be necessary. Memmert and Harvey (2008) highlight the problems with the subjective and general nature of games analysis and suggest that there is a need to define more specific observable elements in order to develop a better understanding of pupils' game learning. In developing an understanding of expertise in games play, previous research has investigated players' pattern recognition abilities (Williams et al., 2006), movement based decision-making responses and eye movements and fixations (Vaeyens et al., 2007), as well as two-dimensional interpersonal distance analysis (Araujo et al., 2002). This research has developed our understanding of the more subtle components of expertise in TIG and can be used in teaching and coaching to develop the characteristics of experts in novice performers. This type of research could be applied to carry out more detailed investigations into the effects alternative approaches have on pupil performance. Moreover, gathering data from more authentic environments using virtual reality technology or head-mounted camera technology during game situations could further develop these areas of investigation.

Since one of the main aims of PE is to encourage individuals to pursue a physically active lifestyle, more research should be carried out to examine the long-term effects that improvements in TIG performance have on continued participation in physical activity. Only by carrying out a larger scale, longitudinal study will we truly understand the impact of improved performance in TIG and PE on continued participation in physical activity. To this end, the message from this thesis to those who determine the PE curriculum in Scotland is simple. A good policy framework is

one that sounds reasonably plausible relative to available empirical data and that turns out to be largely correct. It is unlikely to be correct in all the details. Whether or not the findings from this thesis turn out to be largely correct or mostly incorrect, it will be considered a success if further research is conducted that advances our knowledge regarding the role of TIG in the physical education of children.

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Appendix 1: Informed Consent Forms

Project: Pupils' Perceptions of PE and Team Games

Purpose of the Study
The main purpose of this research is to gather information from Scottish children about their Physical Education experiences, and in particular, about their experiences in team games within the PE curriculum. The results from this investigation will be used to support the need to examine the ways in which team games are taught in both primary and secondary schools. This information will then be used to develop teaching strategies that aim to improve children's performance, enjoyment and continued participation in team games.

Procedure of the Study
Your son/daughter will be involved a 30/40 minute focus group interview (approx. 8 pupils) with the investigator about their PE experiences. Interviews will be tape recorded and transcribed for subsequent analysis. All information will be treated entirely confidentially. Information/data resulting publications/work will be made anonymous and details changed to protect the identity of the interviewees.

Withdrawing from the study
You have the right to withdraw your son/daughter from the study at any time without question.

Questions about the study
If you have any questions about the study please do not hesitate to contact Shirley Gray at the University of Edinburgh on 0131 651 6681 or shirley.gray@education.ed.ac.uk

I have read the details above and agree to allow my son/daughter to take part in the study

Name of Son/Daughter: **Date of Birth:**

Parent/Guardian Signature: **Date:**

Print Name:

Experimenter: Shirley Gray
University of Edinburgh
School of Education
St Leonards Land
Holyrood Road
EH8 8AQ

Games Questionnaire-Informed Consent Form

Project: Pupils' Perceptions of PE and Team Games

Purpose of the Study
The main purpose of this research is to gather information from Scottish children about their Physical Education experiences, and in particular, about their experiences in team games within the PE curriculum. The results from this investigation will be used to support the need to examine the ways in which team games are taught in both primary and secondary schools. This information will then be used to develop teaching strategies that aim to improve children's performance, enjoyment and continued participation in team games.

Procedure of the Study
Your son/daughter will be asked to complete a questionnaire that aims to uncover their thoughts, feelings and perceptions about team games within the PE curriculum. All information will be treated entirely confidentially and information/data resulting in publications/work will be made anonymous.

Withdrawing from the study
You have the right to withdraw your son/daughter from the study at any time without question.

Questions about the study
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Name of Son/Daughter: **Date of Birth:**

Parent/Guardian Signature: **Date:**

Print Name:

Experimenter: Shirley Gray
University of Edinburgh
School of Education
St Leonards Land
Holyrood Road
EH8 8AQ

An Analysis of Games Teaching-Informed Consent Form

Project: Teachers' methods and beliefs about games teaching in the Primary school.

Purpose of the Study
The main purpose of this research is to gather information about the way team games are taught in Scottish Primary Schools. The results from this investigation will be used to describe current teaching approaches and develop new teaching approaches that aim to improve children's performance, enjoyment and continued participation in team games.

Procedure of the Study
Your son/daughter will take part in his/her normal PE lesson. A video recording of the teacher delivering this lesson will be made. This video will then be shown to the teacher so that he/she can explain his/her teaching methods. The video will not be shown to any other parties and will be destroyed once the study is complete. Information/data resulting in publications/work will be made anonymous and details changed to protect the identity of those involved.

Withdrawing from the study
You have the right to withdraw your son/daughter from the study at any time without question.

Questions about the study
If you have any questions about the study please do not hesitate to contact Shirley Gray at the University of Edinburgh on 0131 651 6681 or shirley.gray@education.ed.ac.uk

I have read the details above and agree to allow my son/daughter to take part in the PE lesson that will be recorded on video.

Name of Son/Daughter: **Date of Birth:**

Parent/Guardian Signature: **Date:**

Print Name:

Experimenter: Shirley Gray
University of Edinburgh
School of Education
St Leonards Land
Holyrood Road
EH8 8AQ

An Analysis of Games Teaching-Informed Consent Form

Project: Teachers' methods and beliefs about games teaching Scottish Schools.

Purpose of the Study
The main purpose of this research is to gather information about the way team games are taught in Scottish Schools. The results from this investigation will be used to describe current teaching approaches and develop new teaching approaches that aim to improve young peoples' performance, enjoyment and continued participation in team games.

Procedure of the Study
Your son/daughter will take part in his/her normal PE lesson. A video recording of the teacher delivering this lesson will be made. This video will then be shown to the teacher so that he/she can explain his/her teaching methods. The video will not be shown to any other parties and will be destroyed once the study is complete. Information/data resulting in publications/work will be made anonymous and details changed to protect the identity of those involved.

Withdrawing from the study
You have the right to withdraw your son/daughter from the study at any time without question.

Questions about the study
If you have any questions about the study please do not hesitate to contact Shirley Gray at the University of Edinburgh on 0131 651 6681 or shirley.gray@education.ed.ac.uk

I have read the details above and agree to allow my son/daughter to take part in the PE lesson that will be recorded on video.

Name of Son/Daughter: **Date of Birth:**

Parent/Guardian Signature: **Date:**

Print Name:

Experimenter: Shirley Gray
University of Edinburgh
School of Education
St Leonards Land
Holyrood Road
EH8 8AQ

Appendix 2

The University of Edinburgh

Team Invasion Games Questionnaire

During your PE lessons, you will have learned to play games such as hockey, football, rugby, basketball and netball. They are all games that fit into a category called 'Team Invasion Games'. They all fit into this category because there are many things about the games that are the same. For example, in all the games, two teams compete against each other to score into each other's net/goal/try line. In order to do this, the team has to get the ball, keep the ball and take it into the other team's half of the playing area to score. However, if they lose the ball, they have to defend their half of the playing area and try to get the ball back!!!

Today's date: Day ☐ Month ☐ Year ☐

With the help of your teacher, please complete the following questionnaire.

How to fill in the questionnaire

1. Read each question carefully
2. The questions at the beginning can be answered by putting a tick in the box that applies to you.

For example

Yes ☐ No ☐

3. Sometimes you might be asked to write a number on a line.

For example ⟶ 3

4. Sometimes you might be asked to write your answer on a line.

For example ⟶ Sport

5. For the questions that relate to a specific team invasion game, the first thing you will do is choose which person you are most like. Once you have chosen who you are most like, then you will decide whether the statement is really true for you or sort of true for you. Remember that this is not a test. Please answer all questions as honestly as possible.

Sample: How good am I at basketball?

If I know that I am quite good at playing basketball, but I am not really good, then I would tick this box.

Really true for me	Sort of true for me			Sort of true for me	Really true for me
	✓	Some children know they are really good basketball players.	or	Others don't feel they are good when it comes to playing basketball.	

Part 1

A1. Are you a boy or a girl?

Boy..... ☐
Girl..... ☐

A2. Which school year are you now in?

Primary 6..... ☐
Primary 7..... ☐
S1..... ☐
S2..... ☐
S3..... ☐
S4..... ☐

A3. How old are you now?

9 years old ☐
10 years old ☐
11 years old ☐
12 years old ☐
13 years old ☐
14 years old ☐
15 years old ☐
16 years old ☐

A4. In what month of the year were you born?

January ☐
February ☐
March ☐
April ☐
May ☐
June ☐
July ☐
August ☐
September ☐
October ☐
November ☐
December ☐

After School Sports

This section of the questionnaire is about any sport or physical activity clubs/sessions that you do after school. They do not include PE lessons that take place during your normal school days.

1.At the moment, how many school sport or physical activity clubs/sessions do you go to at least one time per week?

No clubs..... ☐
One club..... ☐
Two clubs..... ☐
More than 2..... ☐

2. What are the sport or physical activity school clubs/sessions you go to and on what day(s) do they take place?

	Type of Sport or Physical Activity (e.g., Tennis)	Day(s) (e.g., Wednesday & Friday)
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____

3. At any after-school club, do you play in competitions against other schools or clubs?

Yes ☐ No ☐

If YES, which sports/ physical activities do you play in these competitions?

1. _____
2. _____
3. _____

4. Have you represented your district or national team? Yes ☐ No ☐
If YES, in which sport(s)/ physical activity (ies)?

1. _____ 2. _____

PE and Team Invasion Games

This section of the questionnaire is about the team invasion games you were taught this year during your PE lessons.

1. Tick the box beside the team invasion game(s) you were taught this year in your PE lessons?

Basketball ☐ Football ☐ Rugby ☐ Hockey ☐
Netball ☐ Handball ☐ Other _____

2. Write the name of the game(s) you were taught and state whether you were you taught in a class that was: boys only, girls only or girls and boys together.

Game	Boys only	Girls only	Girls and boys together.
1. _____	☐	☐	☐
2. _____	☐	☐	☐
3. _____	☐	☐	☐

3. If you were only taught one of these games this year then complete **table A**, if you were taught more than one of these games this year then complete **table B**.

Table A: Tick the box that describes how much you enjoyed learning to play this game.

Really true for me	Sort of true for me			Sort of true for me	Really true for me
		Some children really enjoyed being taught how to play this game in PE.	or	Some children did not enjoy being taught this game in PE.	

Table B: Tick the box that describes how you felt about learning to play these games?

Really true for me	Sort of true for me			Sort of true for me	Really true for me
		Some children enjoyed all of the games they were taught in PE this year.	or	Others did not enjoy any of the games they were taught this year.	

4. Choose a maximum of 2 games you were taught in your PE class this year and tick the statement that best describes your attendance/participation.

Name of Game 1 _____

I attended and participated in all of the lessons. ☐
I attended and participated in most of the lessons. ☐
I attended and participated in some of the lessons. ☐
I was absent or did not participate in most of the lessons. ☐
I was absent or did not participate in any of the lessons. ☐

The main reason(s) for any absences or non-participation was/were:

Holiday ☐
Injured ☐
Illness ☐
Other (specify if possible) ☐ _____

Name of Game 2 _____

I attended and participated in all of the lessons. ☐
I attended and participated in most of the lessons. ☐
I attended and participated in some of the lessons. ☐
I was absent or did not participate in most of the lessons. ☐
I was absent or did not participate in any of the lessons. ☐

The main reason(s) for any absences or non-participation was/were:

Holiday ☐
Injured ☐
Illness ☐
Other (specify if possible) ☐ _____

Part 2 Basketball Questionnaire

How good am I at playing basketball during my PE lesson?

	Really true for me	Sort of true for me			Sort of true for me	Really true for me
1			Some children do very well when it comes to playing basketball.	Or	Others don't feel they are good when it comes to playing basketball.	
2			Some children feel uneasy when it comes to playing basketball.	Or	Others feel confident when it comes to playing basketball.	
3			Some children would rather watch basketball than play.	Or	Other children would rather play than watch.	
4			Some children wish they could be better at playing basketball.	Or	Others think they are good enough at playing basketball.	
5			Some children are unhappy with themselves when playing basketball.	Or	Others are pleased with themselves when playing basketball.	
6			Some children feel that they are better basketball players than most in their class.	Or	Others don't feel that they play as well as others in their class.	
7			Some children find playing basketball very difficult.	Or	Others find playing basketball very easy.	

How much do I enjoy playing basketball in my PE lesson?

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
1			Some children really enjoy playing basketball.	Or	Others don't enjoy playing basketball at all.		
2			Some children feel really bored playing basketball.	Or	Others never feel bored playing basketball.		
3			Some children feel really good when they play basketball.	Or	Others feel really bad when they play basketball.		
4			Some children enjoy learning new skills in their basketball lesson.	Or	Others don't like learning new skills in their basketball lesson.		
5			Some children have lots of fun playing basketball.	Or	Others have no fun at all playing basketball.		
6			Some children enjoy being part of a basketball team.	Or	Others don't like being part of a basketball team.		
7			Others don't like competing against other basketball teams.	Or	Some children really like competing against other basketball teams.		

Is learning to play basketball in PE important to me?

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
1			Some children don't think you need to learn to play basketball.	Or	Others think that learning to play basketball is very important.		
2			Some children value the skills they learn when playing basketball.	Or	Others don't care about learning to play basketball.		
3			Some children don't think that they will play basketball when they are older.	Or	Others think that they will definitely play basketball when they are older.		
4			Some children think that learning to play basketball is an important part of their education.	Or	Others think that they don't need to learn to play basketball in school.		
5			Some children think that the skills learned in basketball are important in every day life.	Or	Others think that the skills learned in basketball don't contribute to every day life.		

Thank you very much for your co-operation in completing this questionnaire!!!

Appendix 3: Pupil Focus Group Interview

PE General

What do you do in your PE lessons?

What do you like doing?

Why do you like doing these activities?

Is there anything you don't like doing in your PE classes?

Why do you dislike these activities?

Is PE important to you?

Enjoyment

What team games do you play in your PE class (reminder)?

Do you like playing these games?

Why do you like playing these games (this game)?

Is there anything about games or these games that you don't like?

Why do you not like these things/games?

Perception of Ability (confidence and motivation)

Are you good at playing these games?

What games are you the best at or what aspects of a particular game are you good at?

How do you know that you are good at this?

How does it make you feel when you are good at playing games?

Perception of Ability (children who believe they are not good at any game (or aspect of a game)

What are you not good at?

How do you know you are not good at this?

How does this make you feel?

How does it make you behave?

Would you like to be good at games/are they important to you (why yes – why no)?

What do you when you feel like that (how do you behave/what does it make you do)?

What games are you not good at or what aspect of a particular game are you not good at?

How do you know you are not good at this?

What do you when you feel like that (how do you behave/what does it make you do)?

Are there other activities within PE that are important to you and why (why yes-why no)?

Value

Whether you like or dislike team games, do you think that it is important that you should learn to play them?

Is it important to you to be a good games player?

Why is it important or not important?

What activities are more important in PE and why?

Do you think that you will still play games when you are older and why?

Will you do something else (or nothing) and why?

Appendix 4: Pupil Interview Categories

Reasons for Liking/Disliking Activities in Physical Education

Reasons for Liking	Reasons for Disliking
P7	P7
Fun Scoring/Winning Performing Skills (Like to perform and good at performing) Play already/Experienced Novel Using Equipment	Performing skills (Not good at, no improvement, don't like, difficult) Not fun/boring Don't see the point Too physically demanding Have to do it with girl/boy A boy's activity
S2	S2
Fun Being in a team Play already/Experienced Good at it Learning skills Scoring Confident playing	Not good at it Not fun Negative experiences/behaviours Scared of being hurt
S4	S4
Fun Play already/Experienced Good at it Similar abilities/effort/attitudes to others More relaxed atmosphere Choice End of the day	Don't like/boring Other take it too seriously Others perform better Teacher dominated/no choice Unfair team Prefer other sports

Reasons for Liking/Disliking Team Invasion Games in Physical Education

Reasons for Liking	Reasons for Disliking
P7	P7
Fun Scoring/Winning Performing Skills Learning Being in a team Experienced Physical aspects	Performing skills (Not good at, too difficult, don't like, others better) Not fun/boring Don't like practising Rules Too physical
S2	S2
Fun Being in a team Good at it Performing skills Small-sided games/more involvement Tackling	Other players' attitudes Other are better Not fun Too physical
S4	S4
Good at it Being in a team Like ability/more involvement Tackling Good/Comfortable playing environment	Other players' attitudes Don't like playing with boys/girls Too Physical

How Do I Know I'm Good/Not Good?

How do I know I'm good?	How do I know I'm not good?
P7	P7
Performing (a specific skill, scoring, reaching game objective) Experienced Enjoy Improved External feedback Trials/selection	Performing (Not able, lose possession, other team scores, others better) Not interested/Other interests External feedback Scared of being hurt
S2	S2
Performing (skills) Experienced	Performing (skills) External feedback Don't like Scared of being hurt
S4	S4
Performing Skills Experienced External Feedback	Performing skills External feedback

How Do I Feel/Behave When I Know I'm Good/Not Good?

When I Know I'm Good	When I Know I'm Not Good
P7	P7
Positive feelings (happy, excited, surprised, celebrate, good) Want to continue to participate Apply more effort Feelings of improvement Proud Confident	Decrease effort Increase effort Frustrated Bad Decreased confidence Let the team down Left out
S2	S2
Positive Apply more effort Better than others	Decreased effort (avoid play, give up) Depressed Don't care
S4	S4
Positive Apply more effort	Annoyed Depressed Decreased effort Put under pressure by others

Why Are Team Invasion Games Important?

Primary 7	Secondary 2	Secondary 4
Fun Fitness Being part of a team To learn/improve To develop skills for the future	To be good at/improve Future participation Team (social/friends) Sportsmanship	Fun Good at performing Working/being in a team

Appendix 5: Teacher Interview Questions

Teacher Information

What sports do you or did you play? What are your personal sporting interests?

Do you have any coaching qualifications?

What extra curricular activities do you teach and why?

What curricular activities do you teach?

What is your favourite activity to teach/what activity do you really enjoy teaching and why?

PE and the PE curriculum

What do you think are the most important reasons for doing PE and why?

Pupils' and PE

In general, does this school have any attendance/participation problems (P7/S2/S4)?

Do your pupils seem to enjoy/like PE in general?

Those that like, what do they like and why?

Those that don't like what do they dislike and why?

The role of TIG within their PE curriculum

Should team invasion games be part of a balanced PE curriculum **and why/why not?**

What about team games, do the pupils you teach **(S4/S2)** generally enjoy to play/learn team invasion games?

Those that do enjoy team invasion games, what do they enjoy and why do you think they enjoy?

Those that don't enjoy, what do they not enjoy and why do you think they don't enjoy?

How do you combat these problems? What strategies do you use? What support do you have?

Do you think that the pupils you teach (S2 and S4) value the role of team invasion games within PE**?**

Teaching TIG

There are two general approaches (perceptions of the way they should be taught) to teaching team invasion games: skills first and game understanding first. Which approach do you take? Why?

Can you describe a typical games lesson (P7, S2 OR S4)?

Is the approach you take effective? How do you measure?

When is it ineffective? What makes it ineffective? What do you do when it is ineffective?

Do you enjoy teaching games? Why/why not?

How confident are you at teaching team games?

Are you confident at teaching all team invasion games within the PE curriculum?

What gives you or makes you lack confidence?

How does this affect your teaching?

Appendix 6: Pupil Basketball Questions

S1 Basketball.

Pre Intervention Focus Group Interview

P7 Basketball

What primary school did you go to?

What types of activities did you do in Primary 7 PE?

Did you learn to play team invasion games such as football?

Did you learn to play basketball?

What you remember?

What did you learn?

What do you remember about your lessons?

What do you remember about your performance?

Post Intervention Focus Group Interview

S1 Basketball

What were the main things you learned during this 5-week block?

What do you know now about the game of basketball that you didn't know before?

Did your basketball performance improve?

What aspects of your game improved?

Appendix 7

Tactical Skills Inventory

Basketball

Name: _____

Today's date: Day ☐ Month ☐ Year ☐

Instructions

For the questions that you are about to answer, the first thing you will do is choose which statement is most like **YOU**. Once you have chosen who you are most like, then you will decide whether the statement is really true for you or sort of true for you. Remember that this is not a test. Please answer all questions as honestly as possible.

Knowing what to do when your team has the ball.

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
1			I always know exactly when to pass to a team mate and when not to	**or**	I almost never know exactly when to pass to a team mate and when not to		
2			If we win the ball, I always know exactly what to do.	**or**	If we win the ball, I almost never know exactly what to do.		
3			I always know what I am going to do after I have passed the ball.	**or**	I almost never know what I am going to do after I have passed the ball.		

Knowing about other players in the game.

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
4			I always know what the opposition team is going to do.	**or**	I almost never know what the opposition team is going to do.		
5			I always know exactly where my team-mates are going	**or**	I almost never know where my team-mates are going		
6			If an opponent receives the ball, I always know exactly what he is going to do.	**or**	If an opponent receives the ball, I almost never know exactly what he is going to do.		

Making Decisions (with the ball and without the ball).

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
7			The decisions I make during games about what I am going to do are always very good	or	The decisions I make during games about what I am going to do are always very poor		
8			I always know how to get free from a defender	or	I almost never know how to get free from a defender during a match		
9			I always know what I am going to do next in a game.	or	I almost never know what I am going to do next in a game.		
10			My getting free for a pass is always very good	or	My getting free for a pass is always very poor		

Being ready and able to adapt when possession changes

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
11			My interception of the opponent's ball is very good	or	My interception of the opponent's ball is very poor		
12			If our team loses the ball, I always change to my role as a defender quickly	or	If our team loses the ball, I almost never change to my role as a defender quickly		
13			I always react quickly to changes when we win the ball back from the other team.	or	I almost never react quickly when we win the ball back from the other team.		

Appendix 8: Lisa's Basketball Block

Main Aims
To develop ability to perform in 4v4 basketball games: includes variety of flexible/adaptable basketball skills and movements as well as decision making on and off the ball (aimed at creating space in order to move towards the target and score).

Game Understanding
The pupils decision making abilities will be enhanced by developing their understanding of the following concepts.

Keeping the ball away from the opposition.
Creating space on and off the ball, to keep possession and to reach the target.
Re-gaining possession and the counter attack.
Denying space in the key area.

Movement Development
The aim of this block is to develop a repertoire of movements that enable the pupils to react and adapt within a game environment so that they may successfully apply the above concepts.

This objective is reached by encouraging:

A variety of passing skills applied in a 'decision-making' context (catchable passes)
Dribbling skills, purposefully applied in order to reach the target or create space.
Movement off the ball to create space for self or team-mate or in key area.
Receiving on the move, preparing for next decision (pass, dribble, shoot or fake and shoot).
A variety of shooting skills, linked to individual's characteristics and game context.

	Tactical Focus	Content	Content Objective
1	Keep the ball and reach the target.	1. 3v3 basketball 2. Pass and move in grid, on the whistle, move to the grid opposite as quickly as possible and shoot. 3. As above, defender can move into grid on the whistle. 4. As above, 3v1. Second defender introduced on whistle. 5. 3v3 basketball	To emphasis **AS A TEAM** reach the target **AS QUICKLY AS POSSIBLE.** To develop the players ability to get the ball to the shooting zone and target as a team as quickly as possible (scanning, showing for the pass, receiving on the move, sending a catchable pass). Working as a team, see your team mate, show for the pass, away from defenders – toward the target.
2	Intercept the ball and reach the target (counter attack).	1. 3v3 basketball 2. 2v2 in an area under the basket. One feeder stays closer to the half-way line. Feeder attempts to feed into the attackers who try to shoot and score. The feeder always stays close to the centre line. As soon as the defenders have possession they attack by reaching the feeder and move towards the opposite basket, thus creating a 3v2 situation. 3. 4v4 Half Court Organise team so that the fastest player aims to run long as soon as your team has possession.	To emphasis **AS A TEAM** reach the target **AS QUICKLY AS POSSIBLE.** To understand the concept of attacking at pace once possession has been regained. A **COUNTER-ATTACK.** To develop ability to move forward towards the target, showing for the ball, receiving on the move, head up looking for the next option. Continue to focus on **AS A TEAM** reach the target **AS QUICKLY AS POSSIBLE**
3	Make the defender move away from receiver/target.	1. 4v4 Games. 2. Task 3v1 then 3v2 (defender must try to get the ball or mark the player). Work out the best way to make the defender move away from the	Captain must negotiate with players their roles and responsibilities; Where should players move to on the court to initiate the counterattack and why? To understand the concept of making the defender move to create space in the key to shoot and to develop pass and move skills and the ability to move in close to the

		target so that you have space to shoot. 3. 4v4 Half Court	basket to shoot. To focus on AS A TEAM reach the target AS QUICKLY AS POSSIBLE. If this is not possible, you MUST keep the ball and make the defenders move away from the basket.
4	Deny space around the target.	1. 4v4 Games 2. Set up a zone, 2 or 3 players from another team, make 3 passes around the zone then try to shoot. 3. 4V4 Games	Emphasise defenders protect the basket area before the fast break. To understand the concept of defending the space under the basket as a team. To develop movement and communication skills in order to protect the space under the basket. To SPRINT to set up zone as soon as your team loses possession. What happens if one person is too slow to get back to the zone?
5	Application of tactical knowledge and evaluation skills in tournament format.	4v4 Games **Game 1**: How well did your team protect the zone under the basket? **Game 2:** How quickly did your **team** counter-attack once possession had been regained? **Game 3:** How well did your team work together to make the defenders move away from the basket?	To develop game performance focussing on teamwork to reach the target quickly, making the defenders move under the basket and defending the zone under the basket.

Appendix 9: Anthony's Basketball Block

Main Aims: To develop pupil performance in 4v4 basketball and the skills of passing, dribbling and shooting.

Game Understanding: To understand why certain or correct techniques are more effective in a game situation than others.

Movement Development: To develop passing, dribbling and shooting in order to take part in a 4v4 game of basketball.

	Focus	Content	Content Objective
1	To move with and without the ball and to learn new skills	1. With a ball each, find a space and begin to dribble anywhere in the hall. 2. Same task, use left hand and then the right hand. 3. Move around the hall and when you hear the whistle, do a jump stop. 4. Right hand then left hand dribbling only. 5. Dribble the ball and protect it with arm and body, change on the whistle. 6. Ball handling skills. 7.Passing in pairs. 8. 4v4 Benchball	Head up, look for space and don't bang into anyone Two feet, wide base, flex ankles and knees, ball in two hands. To understand how and why you protect the ball when you are dribbling. No dribbling, pass to score.
2	To develop passing skills: the chest pass and the bounce pass and to perform under pressures of time, space and competition.	1. 4v4 Benchball 2. One ball between 2. One player on the outside of the gym, the other in the middle with the ball. The player in the middle has to dribble to an outside player, give a chest pass, receive a pass then dribble back to the middle. 3. Same as above but with the bounce pass. 4. In a grid, 4 v 1. No running with the ball, pass and move. 5. 4v4 Benchball	To focus on passing and different types of pass. To learn to move to receive the pass. To practise the chest pass and the bounce pass to keep the ball away from the defender. To practise the chest pass and the bounce pass.

3	To develop dribbling, pivoting and shooting skills (set shot and jump shot).	1. In half the hall, dribble the ball with one hand and on the teacher's command, change hands. 2. Dribble then on the whistle jump stop. 3. Dribble then on whistle, one-two step to stop. 4. Dribble, on whistle, one-two stop, three fake passes and dribble again 5. Ball handling. 6. Shooting, everyone dribble round the hall – on whistle find baskets to score. 7. Shooting Competition: 1 point to hit the board or rim, 3 for a basket. First team to 11 then 21.	To keep ball to side and protect with other arm. Head up. To understand the purpose of a one-two step and the pivot. To understand what is important when shooting. No-one in the way, aim, bend knees. To learn the set shot. No jump, ball high, one hand under the ball, the other supporting, cock wrists – wave goodbye to the ball.
4	To introduce the lay-up.	1. Dribble in area and on one whistle, change hands, on two whistles, stop. 2. As above, on whistle, place the ball on the floor and collect another. 3. Ball handling skills with a pupil leading each group. 4. Dribble round the area, when a basket becomes free, shoot. 5. The Lay Up (gradual build up) 4v4 Games	To revise the set shot. What are the key things to remember? – aim, look for space, bend knees, reach into the cookie jar. Get as close to the basket as possible. Stand to the right hand side, aim at the top right hand box and release. One step forward with left foot, right knee up, jump and release. Add the dribble, two bounces, step left knee, right knee up and release. To put into the game everything that they have covered on the course so far. (chest pass, bounce pass, dribble, set, jump and lay up.

5	Revision of lay-up and games	1. The lay-up	Stand to the right left side, aim at the top right hand box and release. One step forward with right foot, left knee up, jump and release. Add the dribble, two bounces, step right, left knee up and release.
		2. 4v4 Games	To put into the game everything that they have covered on the course so far. (chest pass, bounce pass, dribble, set, jump and lay up.

Appendix 10: Post Lesson Pupil Interview Questions

Lesson objective from pupils' perspective

What was the main focus of the lesson/What was the key thing about basketball you learned today?

What did you do during the lesson that leads you to believe this?

Did your performance improve in this area?

Skills or game?

Did you spend more time practising the skills or playing the game? What are your thoughts about this?

Did you understand the main purpose of the skills you were practicing? How did this teacher help you? Why did you not understand?

Do you feel that this lesson has helped you to understand the game of basketball?

Do you think that this lesson has helped you to become a better player (skills and decision-making)?

Think of your performance during the game. Are you better now? How do you know?

Enjoyment

Did you enjoy this lesson? Why? Why not?

What did you enjoy most about the lesson and why?

What did you enjoy the least about this lesson and why?

Appendix 11: Post Lesson Teacher Interview Questions

Teaching Strategies

What were your main objectives during this lesson?

Can you describe the teaching strategies your used during that lesson?

What were the key teaching strategies you used to reach these objectives?

Where they effective? If so why? If not, why not?

Pupil Learning

Did the pupils reach your intended learning objectives?

In which aspects of the lesson were the pupils successful and why?

What do you think were the key things they learned?

Did their game performance improve?

How did you measure improvements?

Do you think that the pupils enjoyed this lesson and why?

Do you have any further comments to make about this lesson with relation to this games teaching strategy?